UKCP09 User Interface manual

Contents

1 Introduction

The UKCP09 User Interface (UI) provides access to a range of UKCP09 products based on the choices you make. Following a simple registration process you will be able to generate raw data and publication-quality maps and graphs to suit your needs. We would strongly recommended you to read the UKCP09 User Guidance before beginning to work with the UI.

The UI is integrated with the UKCP09 web pages (see Figure 1.1) to allow you to navigate between the scientific information and the interactive content.

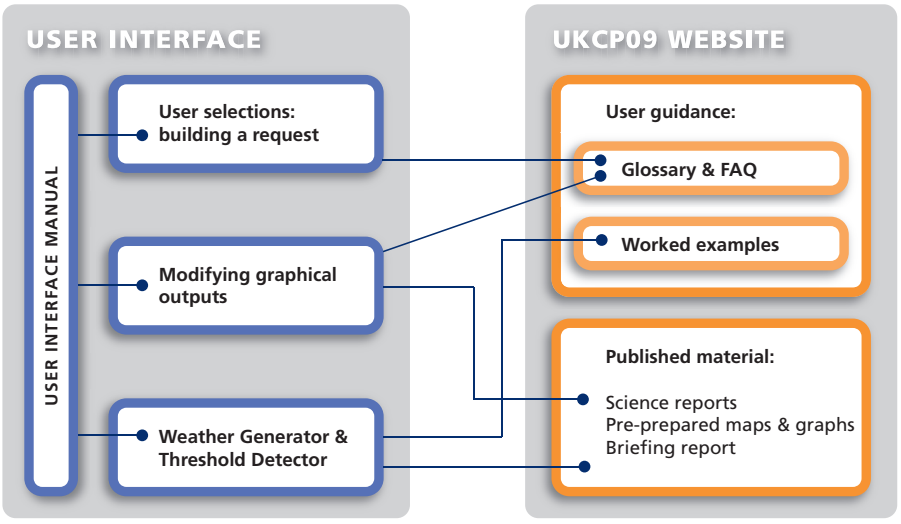


Figure 1.1: Interactions between the UKCP09 web site and UI

This manual will help you to build requests and use the outputs meaningfully. Other reference material is provided in order to find out about specific aspects of the UI. A set of information points linked within the UI's help facility is also provided to support you.

You should be aware that further information on scientific content and how to use UKCP09 in general can be found in the accompanying UKCP09 Science Reports and the User Guidance respectively.

1.2 Basics of the UI

Before starting to use the UI, it is useful to understand its components and how they have been structured.

1.2.1 Structure

The UI has a straightforward structure (Figure 1.2) that you can either choose to follow a simple step-by-step route or a more complicated one. This choice will depend on your demands of the system and of the complexity of the request you are building. These different pathways will be explored in Section 6.

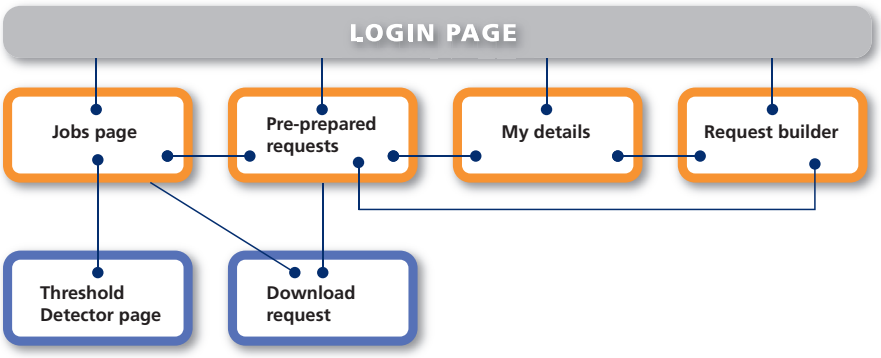


Figure 1.2 The structure of the UKCP09 UI

1.2.2 Navigating around the UI

Once logged in, you will find that the UI has been designed using a common structure for each page as illustrated in Figure 1.3.

The page is divided into three areas: The header at the top contains the Links Bar which provides a useful navigation area to support pages within the UI. The left hand panel displays your login details, a progress bar for your request and a summary of the selections you have made during the request building process. The right hand panel acts as the main work area.

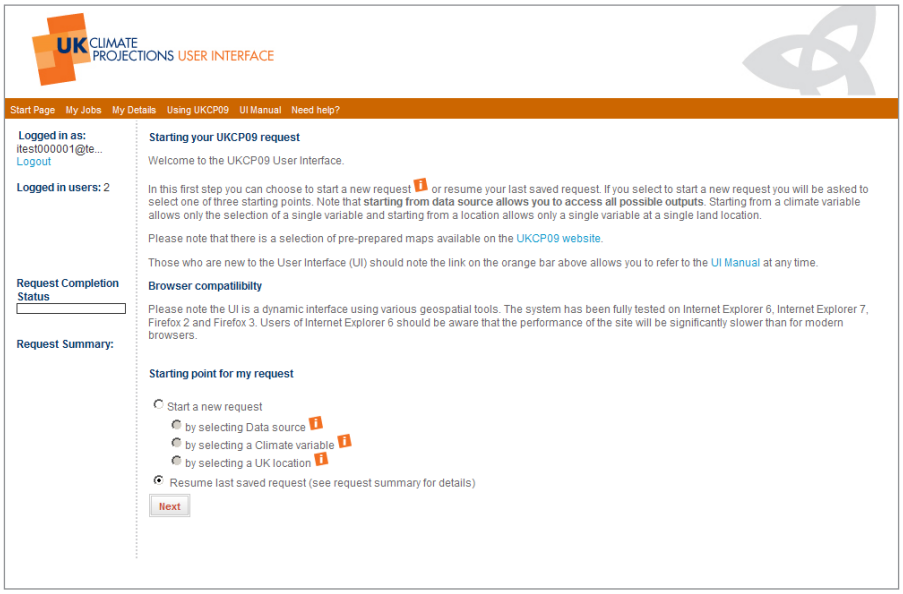


Figure 1.3: Start page of the User Interface

Links Bar

The Links Bar is displayed on all pages and provides access to the specific areas in the interface. These areas are highlighted below:

Start page
Opens the *Start page* where a new request can be started. The Start page can be considered as the UI home page as it is the starting point after logging in. Visiting the Start page allows the user to start afresh at any point.

My Jobs
Opens the *My Jobs page* where previously run jobs and their outputs are accessible (see Chapter 5).

My Details
Opens the *My Details page* where the user can review and modify registration details.

Using UKCP09
Opens the *UKCP09 User Guidance main page* giving you more information about UKCP09 in general and other tools.

UI Manual
Opens the *UI Manual main page* giving you more information about the UI and how to use it.

Need help?
Opens the *UKCP09 Contact page.*

Moving *back* through the UI pages

There may be times when you want to go back and change parts of your request. To do this you will need to use the back button on your browser. When you want to forward through the request builder you will need to use the *next* button on the screen rather than the browser's *forward* button.

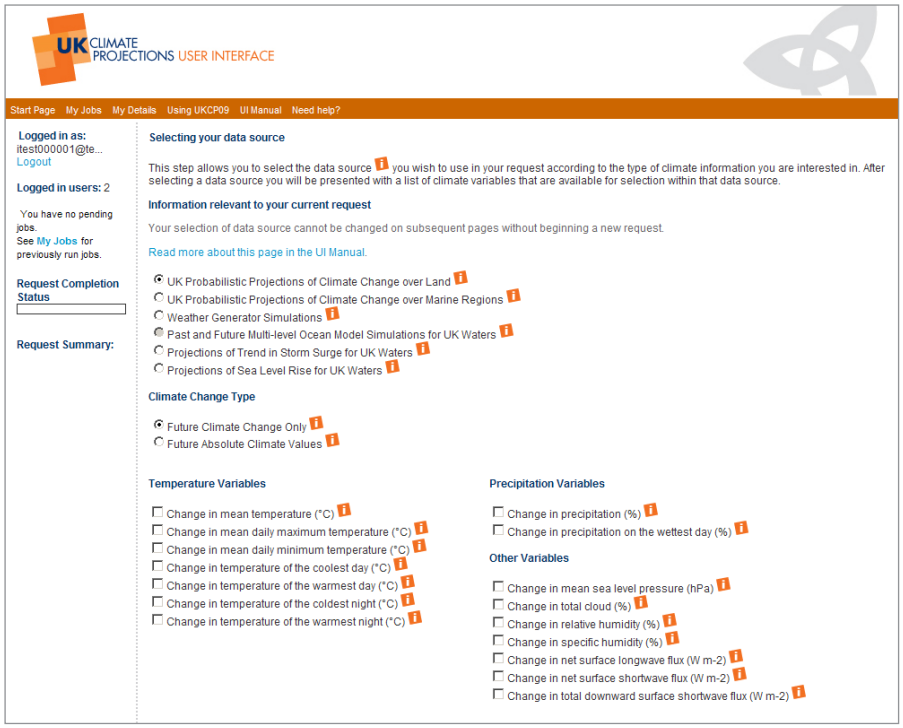
The left panel

The left panel provides information about your current login, offline job status and request information. The Request Status and Current Request Summary are detailed in Section 3.

1.2.3 Help!

If, as you progress through the UI, you need support on using it or require more information on specific terms, there are several features to help you:

1. There are links in the UI to the relevant Section of this manual.
2. There are help points indicated by the i symbol. If you position your cursor over these, pop-up windows provide concise information about the term or feature as shown in Figure 1.4.
3. Scientific and technical information can also be found in the UKCP09 website. (http://ukclimateprojections.defra.gov.uk)



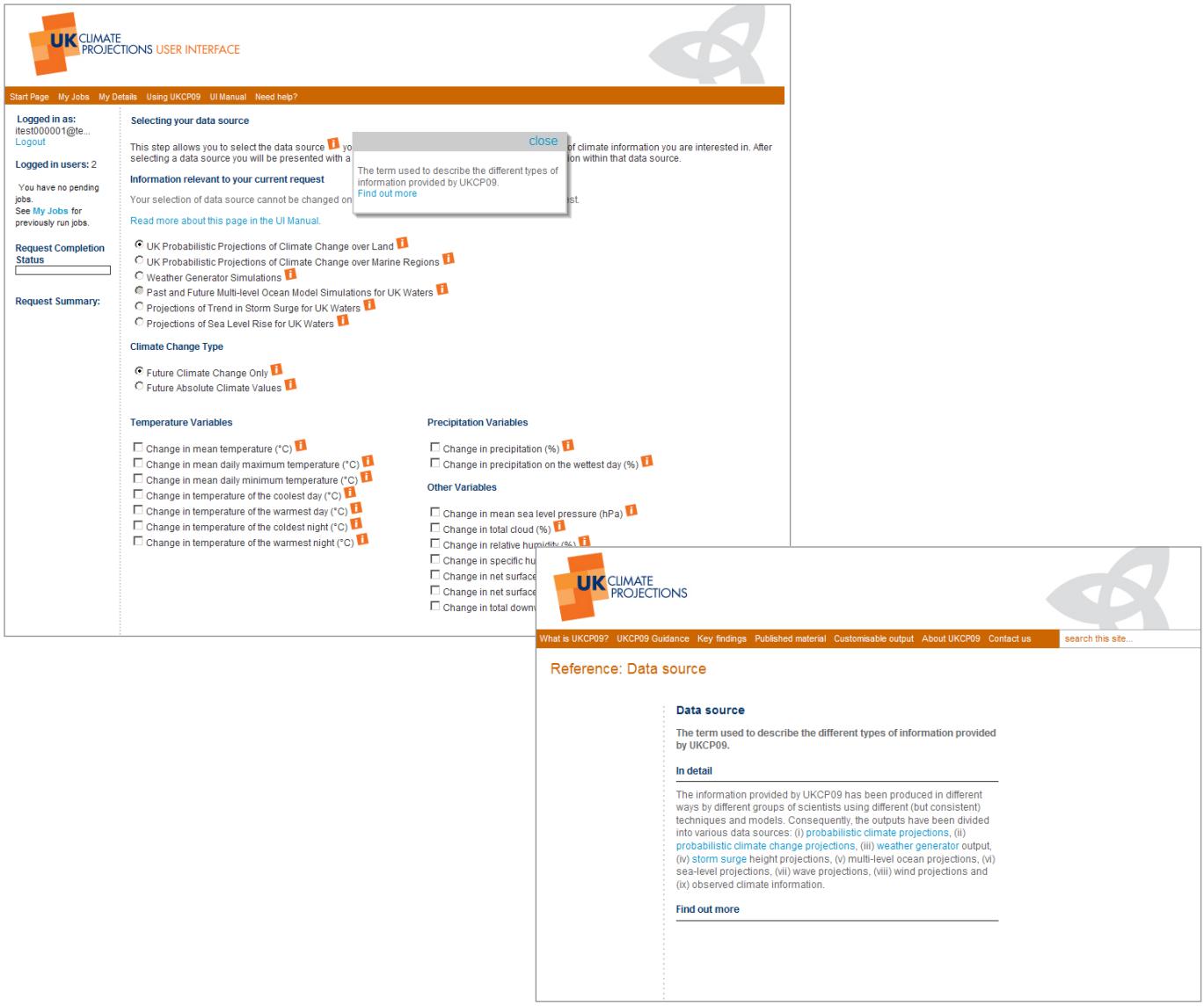


Figure 1.4: Use of the hover-over and clickable i icon to provide contextual help

1.2.4 Definitions & terminology

The UI can manage thousands of user interactions per day. These can be generated in various ways and can range from requesting a single plot to a large volume of binary data. The UI uses the following terminology to describe these interactions:

Request
A complete set of parameters defining the user's requirement. The user can build a request and then submit it to the UI.

Pending Request
A request that has been submitted but has not yet returned any output. This may be queued on the system or undergoing processing.

Job
A request that has been fully processed by the system and has produced some outputs.

Appendix C explains how the server handles and schedules jobs.

1.3 Constraints of the UI

The UI is run on multiple servers to ensure that many users can access it at once. However, at busy periods there is a need to limit the size and number of jobs. As such, the following provisos have been put in place:

To allow as many people as possible to use the UI simultaneously the size of requests are limited. It is therefore not possible to make a *select all* (e.g. choose all the climate variables) or *download all* type of request except in a limited number of cases.

For each particular route through the UI there are various options that are limited depending on other selections you have made.

2 Registration & login

UKCP09 requires all users of the UI to be registered with the system before they can access dynamically generated products. The UK Climate Projections Data licence states that UKCP09 is publicly available, provided certain rules are adhered to.

When you visit the UI in your web browser you will be directed to the Login page. If you are not yet registered you should click on the *Register* link, as shown in Figure 2.1.

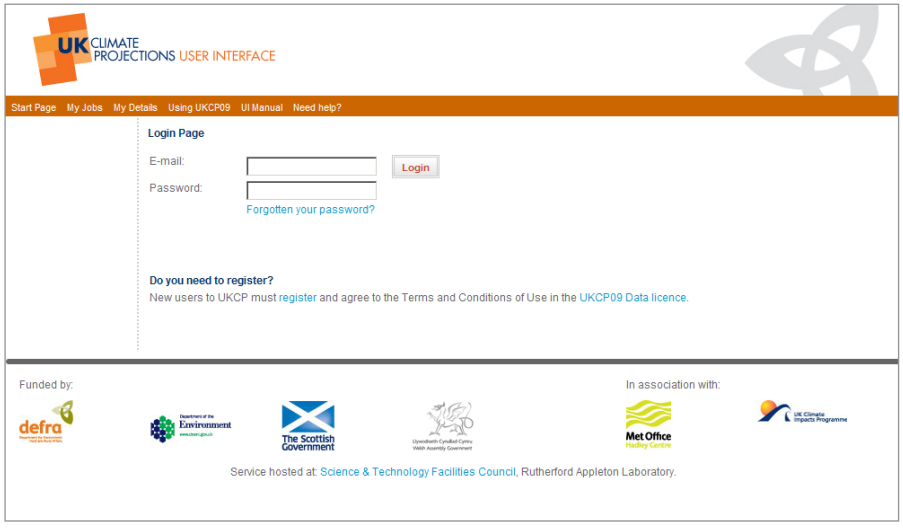


Figure 2.1: Login page with *register* link

This will load the Registration page where you will be asked to provide some details that will be recorded by the system (see Figure 2.2). The system will require an email address that will be mailed to after registration. The message will contain a link that when clicked will automatically activate your account. Once you have done this you will be able to use your email and password to login on the *Login page*.

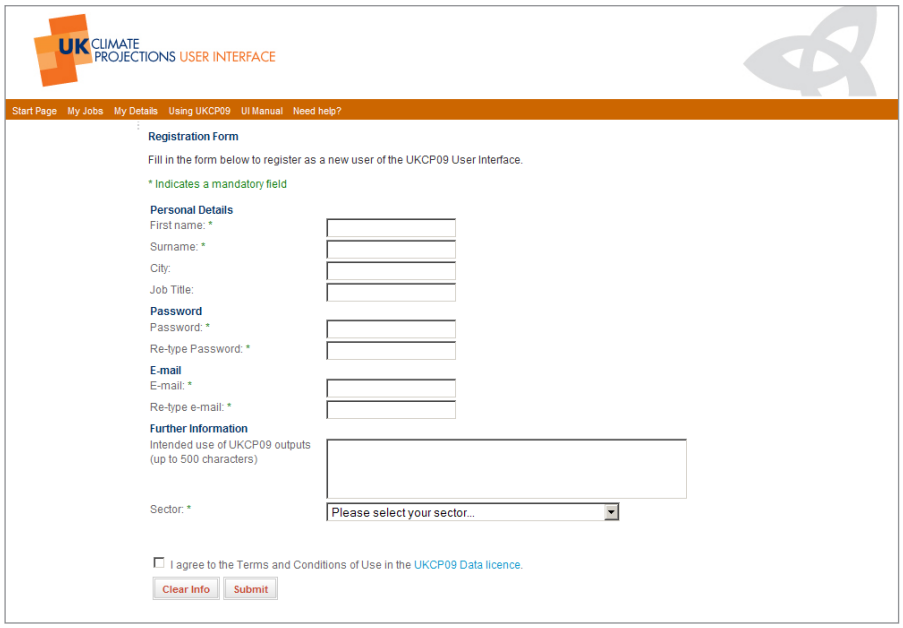


Figure 2.2: Registration page

2.1 Creating a user name & password

When creating your username and password please use the following guidelines. Once you have created your username and it has been submitted it cannot be changed.

- **Username**: This is your email address
- **Password**: Combination of 8–15 letters and/or numbers

The Login page includes a *Forgotten your password*? link that will re-send your password should you lose it.

2.2 Updating your details

It is possible to update your UI account details at any point by clicking on the *My details* link when you are logged in. Once you have modified the required fields click the *Update Details* button to save your changes. Note that you cannot change your First name or Surname.

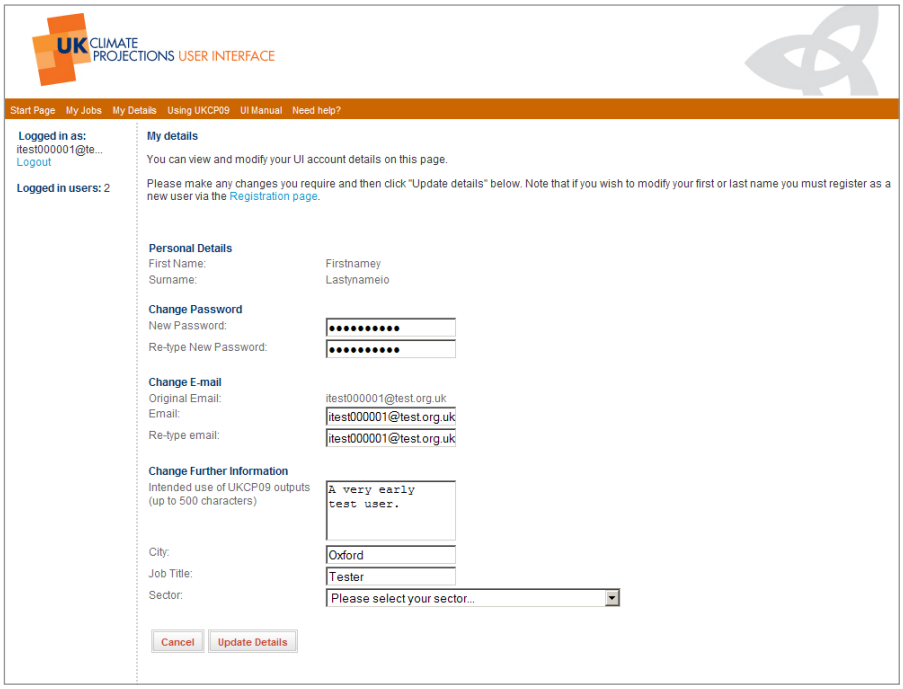


Figure 2.3: My details page

3 Request builder – simple requests

The most common way to generate outputs is to build a request. This is a set of selections that provides a complete description of the output you want to produce. This Section explains more about the Request Builder and other ways in which requests can be generated.

Understanding the Request Builder

The Request Builder is a series of web pages that guide you through various selections to generate and submit a UI request. One of the key aspects of the Request Builder is that its content is determined by any previous selections that you have made. It is therefore important to note that your choices will affect:

- the order in which pages appear
- the number of pages that appear
- the selections available on each page
- the choices available within each selection (such as emissions scenarios)

A good example of this feature is the Location page (as described in Section 7) which will allow different selections from spatial averages depending on choices you have made.

Figure 3.1 models the different routes through the request builder; however, in reality certain pathways may vary from this simplified view. These variations are explained in more detail in Chapter 6.

Request information in the left panel

The number of selections required to complete a request depend upon the choices you make. When stepping through the Request Builder you will see the Request Status bar in the left panel. This indicates how far you have progressed in building your current request. Note that the number of Request Builder pages that will be shown is not known exactly until you have completed the process. The Request Status bar therefore provides an approximate indication of progress.

A summary of your current request is available whenever you have a partially complete request. This is visible in the left panel as the Request Summary. In some cases you can hover over the value of a parameter to see an expanded version in a pop-up window. To resume your current request (when not in the Request Builder) or to reset it you can click on the Start page link of the links bar.

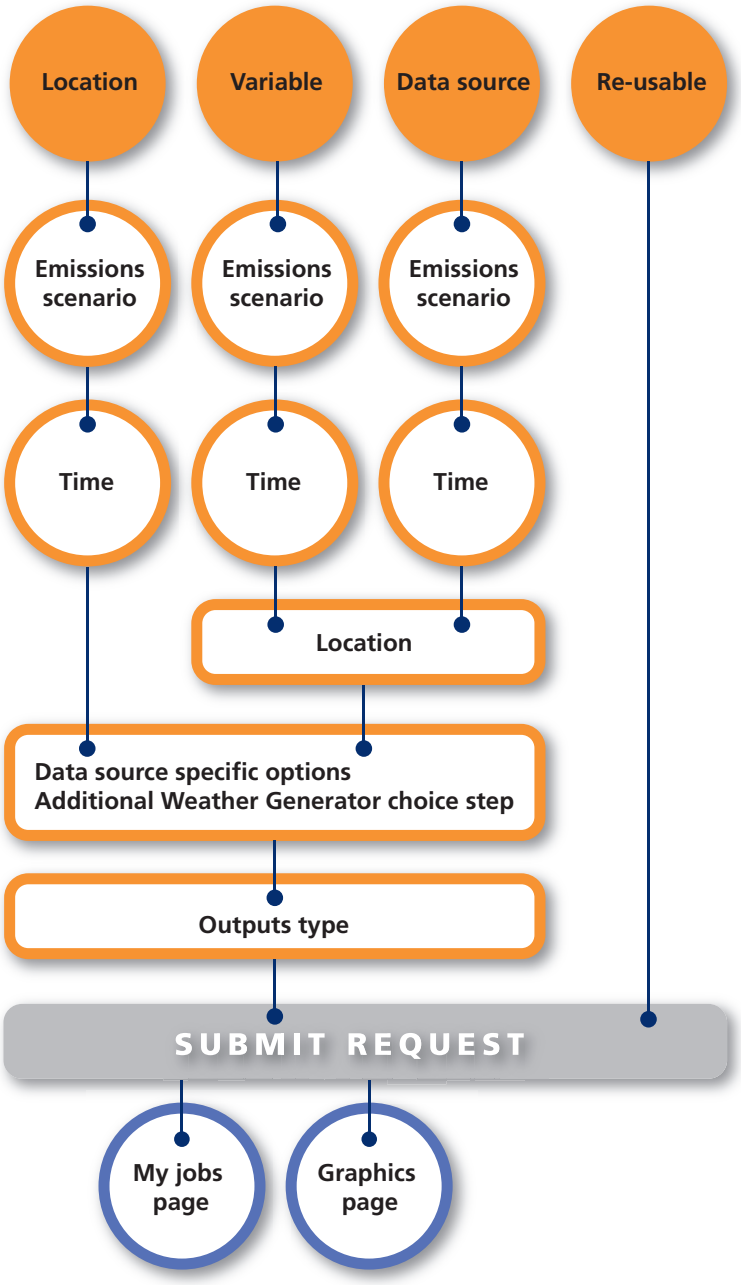


Figure 3.1: Simple view of the Request Builder

3.1 In the beginning…

Before building your first request the system will direct you to the Start page. This is always accessible from the Start page link in the Links Bar. Figure 3.2 shows the Start page.

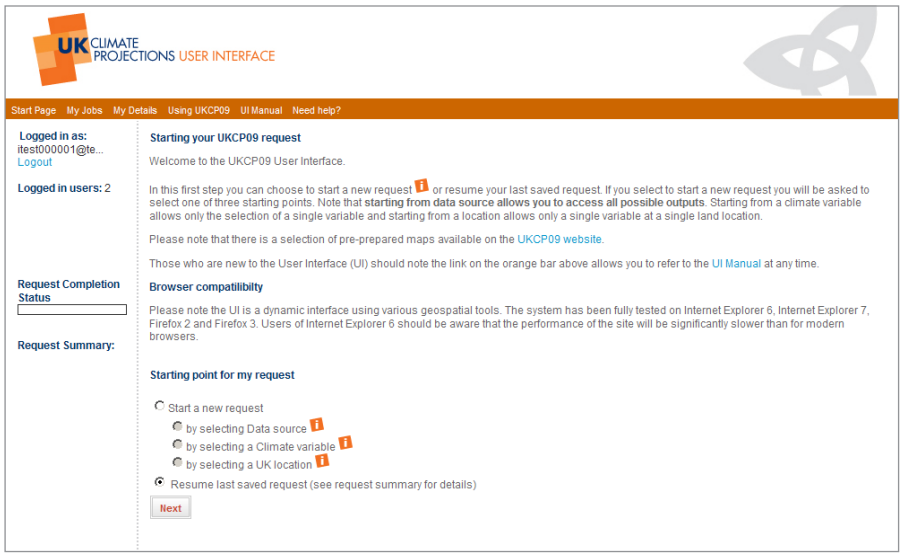


Figure 3.2: The User Interface Start page

The options provided for working on a request provide allow users to:

1. **Start a new request:** starting at one of three different starting points:
   b. **by selecting a Data source**
   c. **by selecting a Climate variable**
   d. **by selecting a UK location**
2. **Resume last saved request:** if the UI has saved a previous request that was not completed.

This Section of the UI manual describes the options above and explains the Request Builder in more detail.

However, a third method of building a request is even simpler to execute. Many of the UI requests have a unique URL (web address) that can be saved and shared between users. You can see examples of these re-usable or sharable URLs in the Science Reports, User Guidance and Pre-prepared Maps and Graphs. When viewing the *My Jobs* page you can hover over the *Share* link for a particular job to access its re-usable URL. This can be pasted into the address bar of your browser by any valid UI user and they can access an identical output.

3.2 Start points

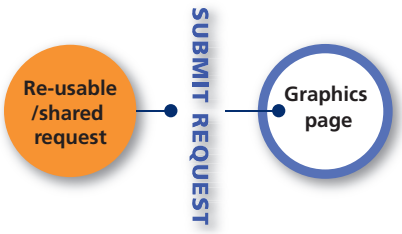
Different users will have very different requirements of the UI. The flexibility of the process allows you to begin building a request from different starting points. If you are primarily interested in one location you can begin to build a request from the location page as a start point. Others can use Data source or climate variable as a start point. It may be appropriate for you to choose a request already generated by another user, in which case you could begin by going to the UKCP09 website and looking at the Pre-prepared Maps and Graphs and selecting the appropriate one.

The following examples use a single request for a Probability Density Function as shown in Table 3.1, but demonstrate how the user can reach the same output via four different routes (listed to the left).

Table 3.1: A typical request summary

PDF request	
Data source	UK probabilistic projections of climate change over land
Variable	Change in mean temperature (°C)
Climate change type	Future climate change only
Location type	River basin
Location	Severn
Emissions scenario	High
Temporal average	July
Time period	2070–2099

3.3 Route 1: As a shared request



The simplest route through the Request Builder is to select a shared request that has been created by a previous user. You can access these by either:

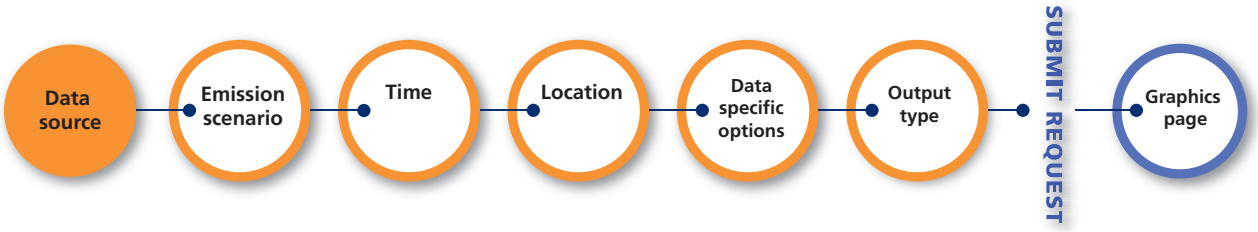
1. Clicking on a link/image in the UKCP09 main website
2. Clicking on a link on your own Jobs page
3. Pasting in a link provided by another UKCP09 user

Provided you are already registered as a UI user, you can access the example request outlined in this Section by clicking the shared request link below:

http://ukclimateprojections-ui.defra.gov.uk/ui/submit/submit.php?submitid=803412432942962755152uH

Clicking the link will take you to the Login page (if not already logged in) and then to the Graphics Page to view the request.

3.4 Route 2: Beginning with the data source



A typical method of building a request is to begin with the data source as the first selection. This will then constrain which variables are selected within the same page. In the example we use here, the user is presented with five subsequent pages in the Request Builder before submitting the request and forwarding to the Graphics page.

3.4 Route 2, Step 1: Data source and variables page

Using the data source as your entry point will constrain the selections available in subsequent pages. Note that only one Data Source is accessible per request.

Begin by logging in and selecting on the Start page a new request option, then select selecting Data Source first and click the Next button to move to the Data Source page, as shown in Figure 3.3.

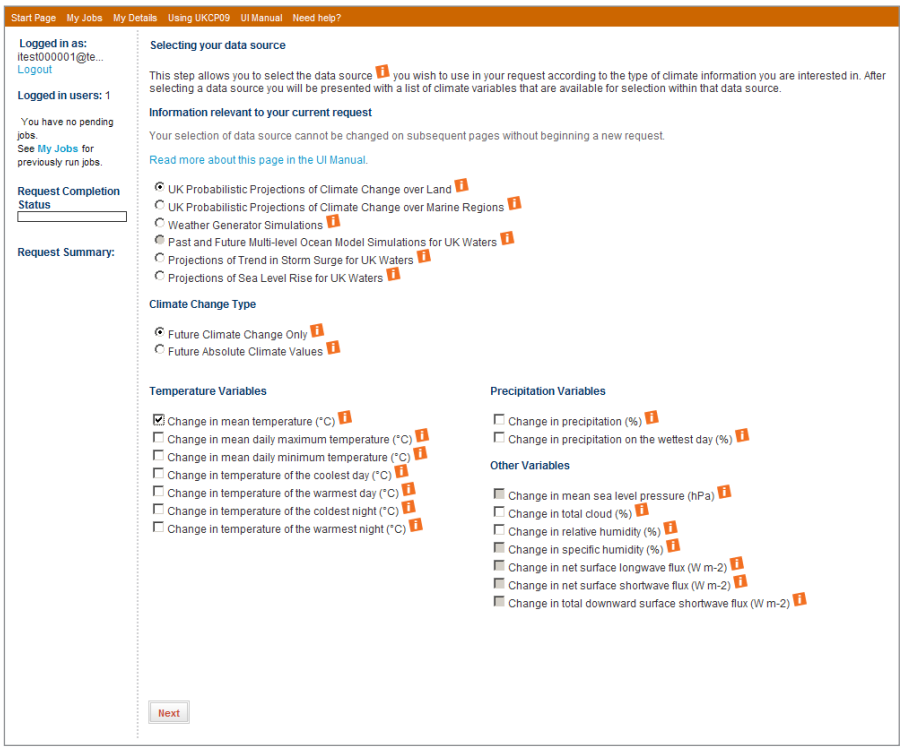


Figure 3.3: Data Source (and Variables) page

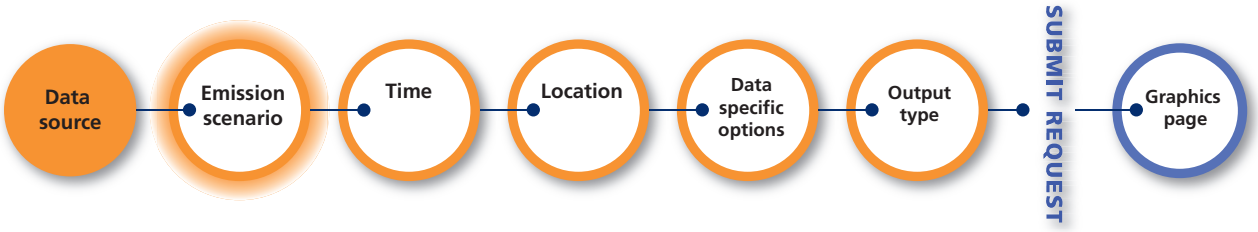
Under Se*lecting your data source* select the first option in the list: *UK Probabilistic Projections of Climate Change over Land*.

The *Climate Change Type* options will appear. The information in Section 6 explains that river basin spatial averages are only available on selection of *Future Climate Change Only*. Click this option.

A list of variables will appear. This has been ordered into three categories to aid selection. Select the first on the list: *Change in mean temperature at (°C)*.

Then click the **Next** button to proceed to the next page.

3.4 Route 2, Step 2: Emissions scenarios page



The Emissions Scenarios page (see Figure 3.4) is next to load. This only has one selection but is given its own page because of the importance of understanding the relevance of emissions scenarios when working with UKCP09.

Select the high emissions scenario and click the **Next** button to proceed to the next page.

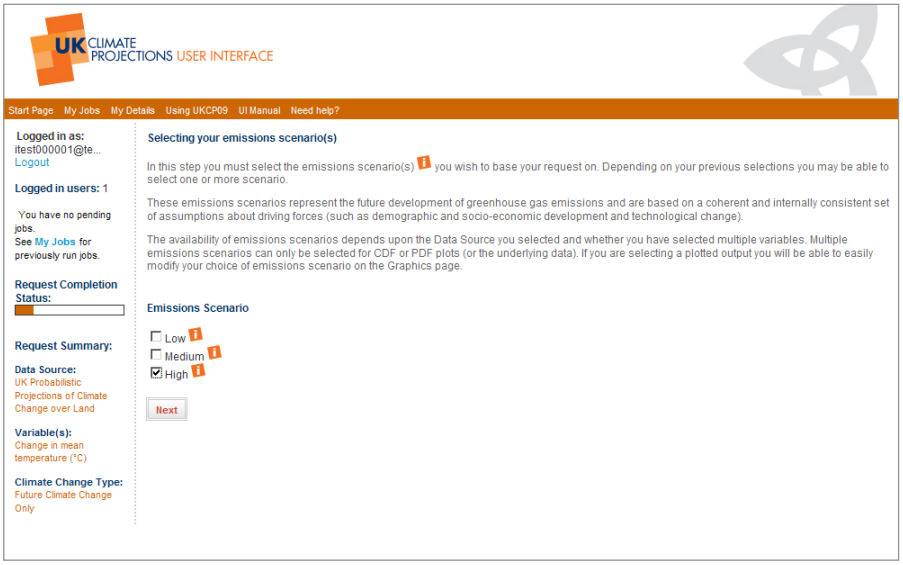
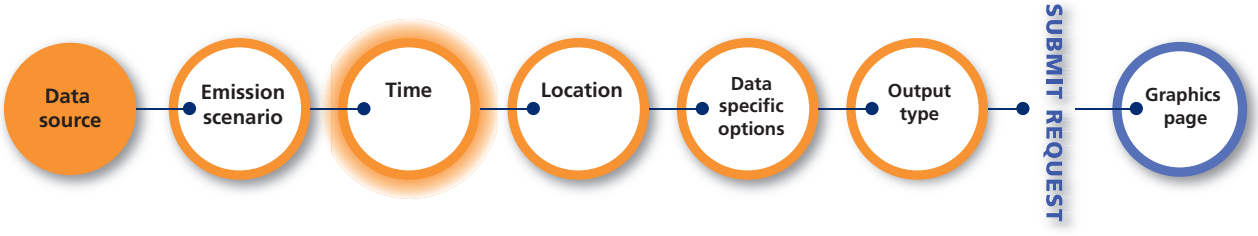


Figure 3.4: Emissions Scenarios page

3.4 Route 2, Step 3: Time selection page



The Time Selection page (see Figure 3.5) will load next. This provides different options depending on the Data Source. In this case we can select Time Period (a 30-year future time period) and Temporal Average (month, season or annual period that data has been averaged over with the Time Period).

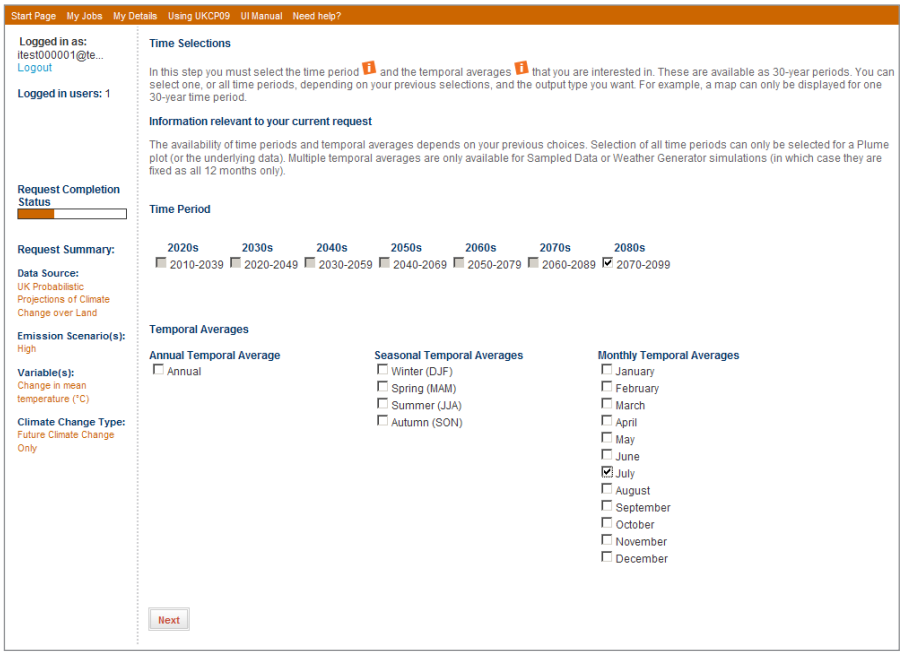


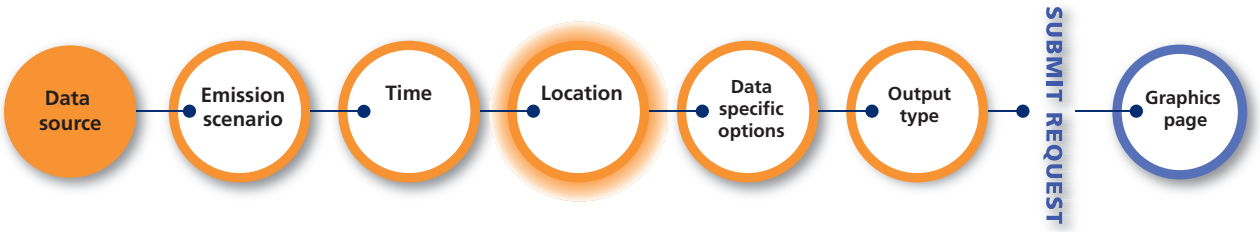
Figure 3.5: What the Time Selection page looks like

Under *Time Period* select: *2070–2099 (representative of the 2080s)*.

Under *Temporal Averages* select: *July*.

Then click the **Next** button to proceed to the next page.

3.4 Route 2, Step 4: Location page



The Location page (see Figure 3.6) allows you to select your location. Depending on your Data Source this can be:

- A single grid box;
- A bounding box (rectangle) encompassing multiple grid boxes;
- An aggregated area (such as a region or river basin); or
- A set of contiguous grid boxes in user-defined shape (Weather Generator only)

Please refer to Chapter 7 for more information about selecting different location types.

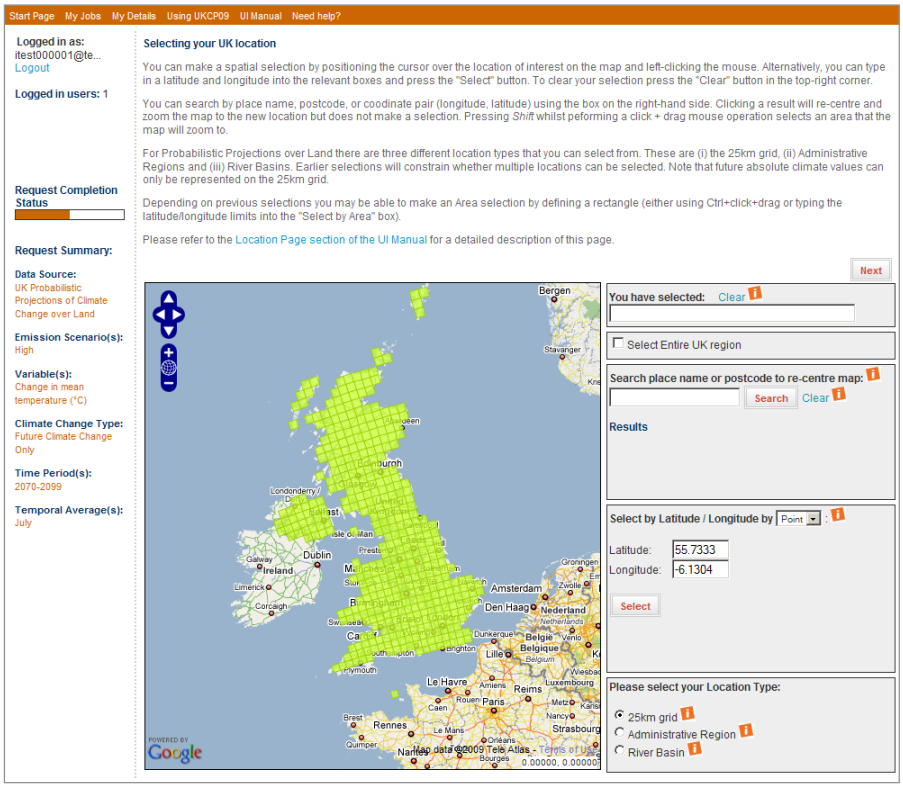


Figure 3.6: An illustration of how the Location page looks

The page loads with the 25 km rotated grid overlay visible. However, we want to select River basins. This can be done in the bottom right hand corner in the box labelled *Please select your Location Type*. Click *River Basin* and the overlay will change to show the various river basins available in UKCP09.

Now move the mouse cursor above Bristol and double-click the left button. The map will zoom in on the Bristol area. Click on a land point near the river Severn and the selected area will be highlighted in orange.

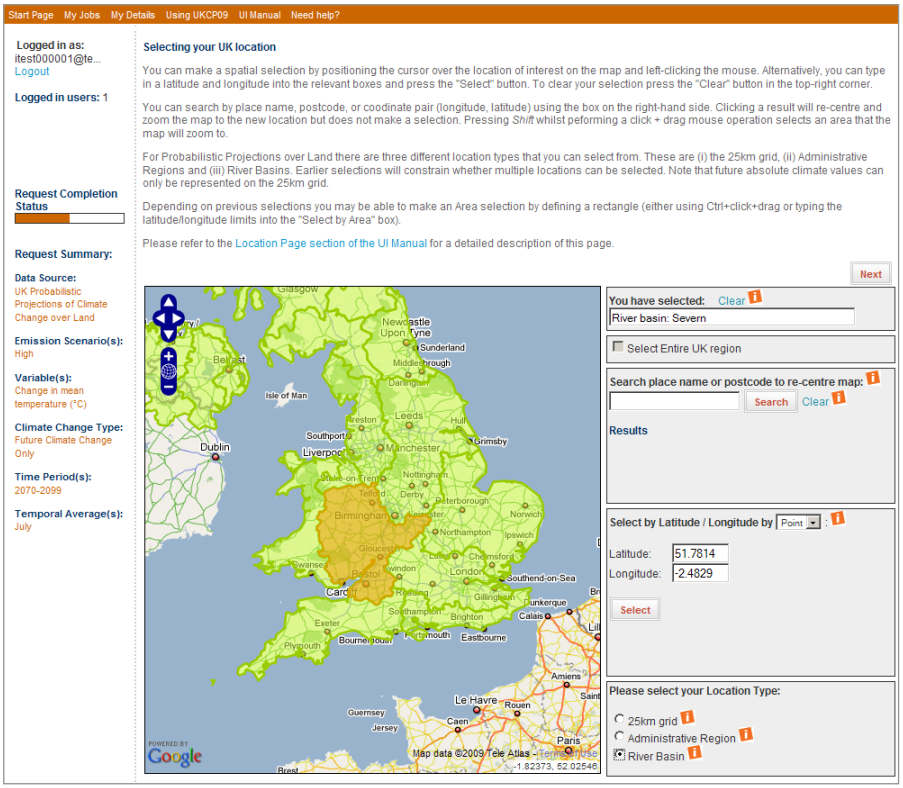
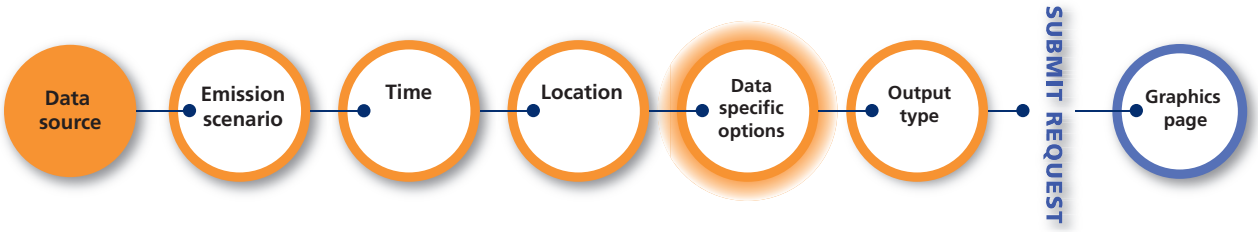


Figure 3.7: Selecting the Severn River Basin

Under the map the *Current selection* label will be populated with what you have selected.

Then click the **Next** button to proceed to the next page.

3.4 Route 2, Step 5: Data source specific selections



For most data sources there is a data source-specific selections page. In the case of probabilistic projections over land the page allows you to select between:

- CDF Summary data
- Full Sampled data

The contextual help will tell you more about these options and the consequences of selecting them. Note that selecting Full Sampled data will allow further selections to be made for sampling the probabilistic data. In this instance please select the: *CDF Summary data*.

Then click the **Next** button to proceed to the next page.

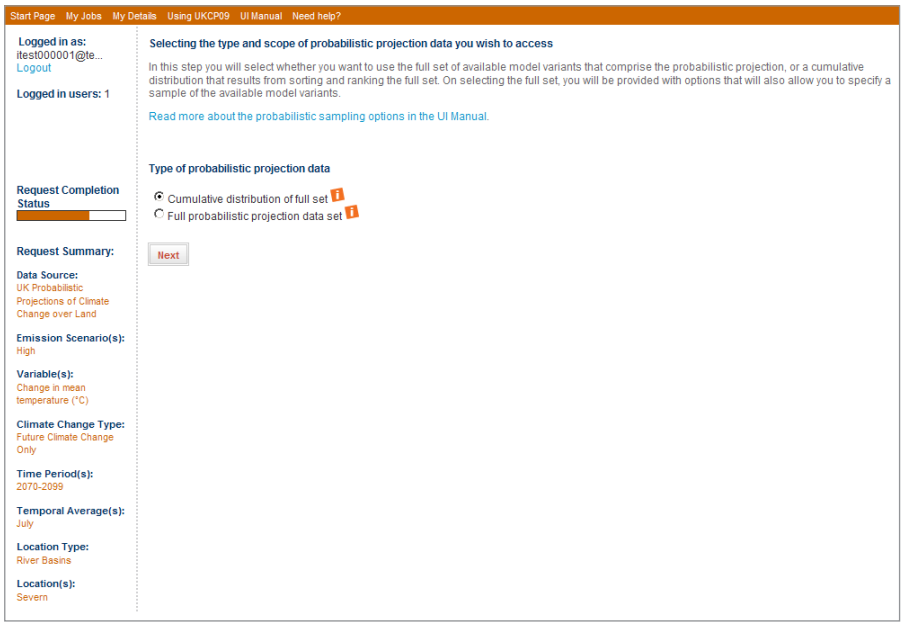
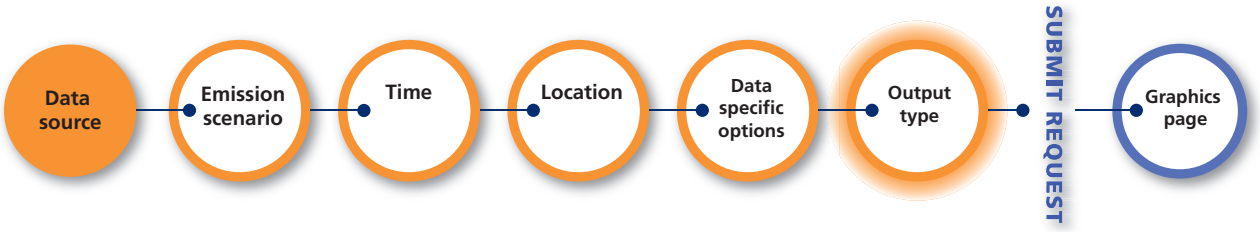


Figure 3.8: Data source 1 specific selections page

3.4 Route 2, Step 6: Output types



The last page in the Request Builder is the Output types page (see Figure 3.9). This allows you to select whether a plot or raw data is required, it also allows selection of data format (raw data only) and other options such as inclusion of a user-defined description of the request for future reference.

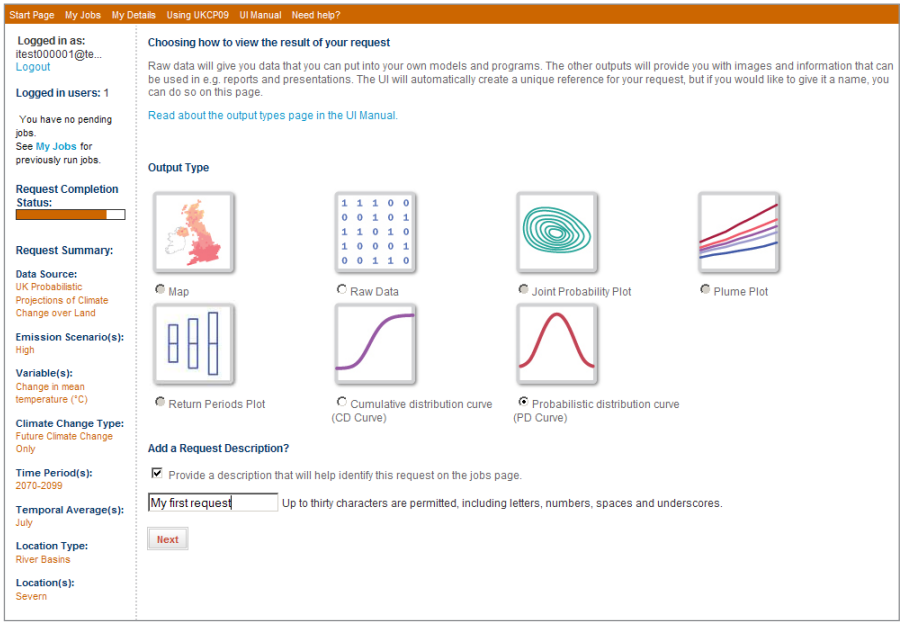


Figure 3.9: Illustration of the Outputs page

Select the *Output Type*: *Line Graph (PDF)*

Then tick the box besides *Add Request Description* and insert the description *My first request* into the input box (as shown in Figure 3.10).

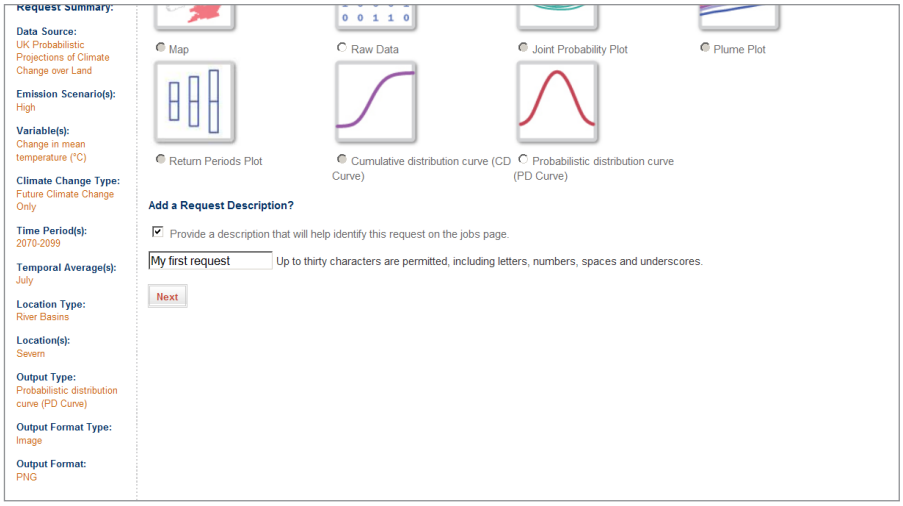
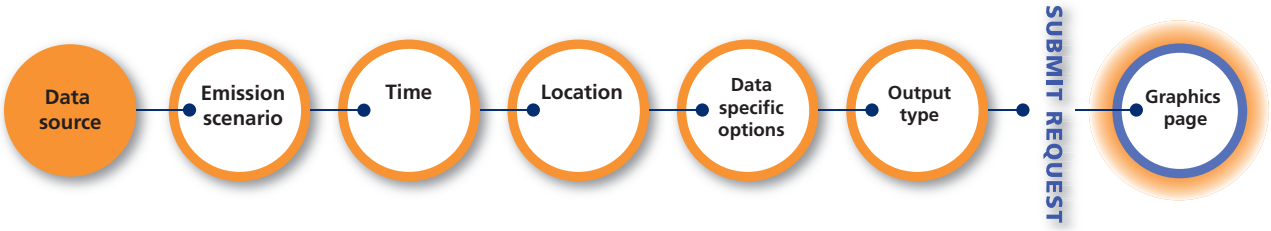


Figure 3.10: Inserting your own Request Description

Then click the *Submit button* to submit the request. The request is for a plot and because it is relatively simple, will be processed immediately by the UI.

If you choose not to provide a request description the UI will generate one for you.

3.4 Route 2, Step 7: Graphics page



Whenever a graph is selected you will be forwarded to the Graphics page (see Figure 3.11) which provides the following functionality:

- Review of the output before downloading final version
- Options to configure the look of the plot (such as font size)
- Options to modify the data request (such as emissions scenario)
- Format options such as image format and size
- Download data option

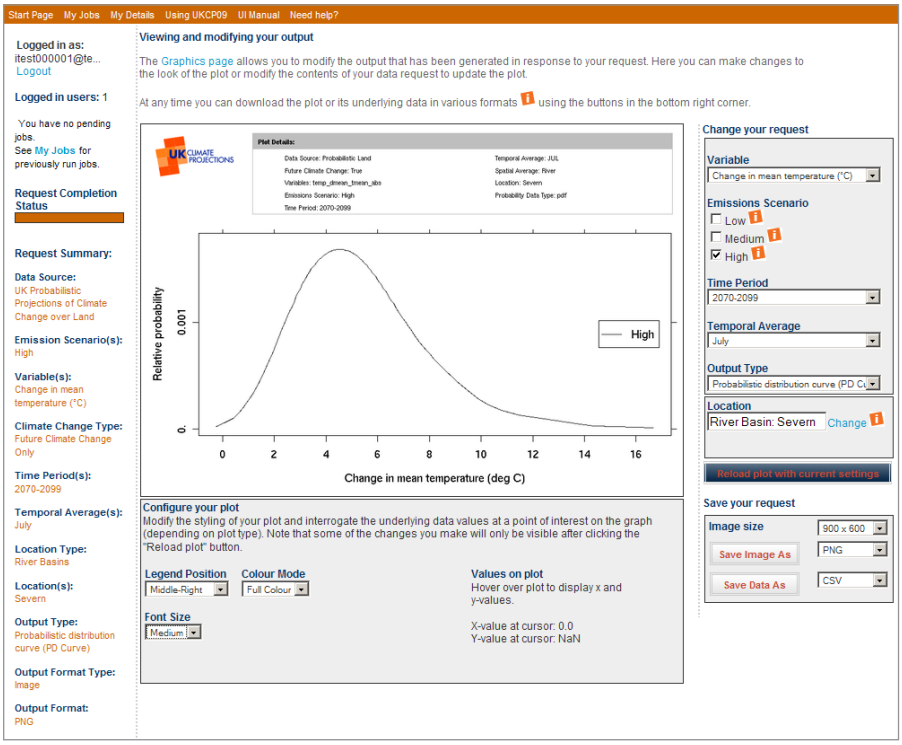
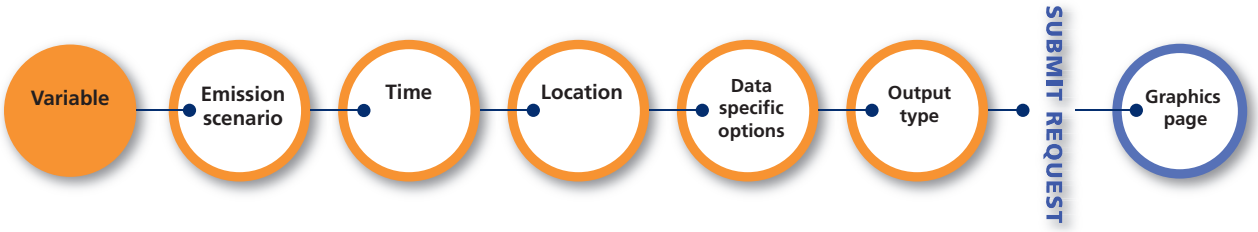


Figure 3.11: Graphics page showing various options that can be modified

3.5 Route 3: Stepping through the pages from variable



An alternative method of building a request is to begin with the climate variable as the first selection. This will then constrain which data sources are selectable. In the case of *UK Probabilistic Projections of Climate Change Over Land* you will also be required to select your Climate Change Type on this page.

Only one variable can be selected on the *Variables start page*. Should you require an output with multiple variables please use the *Data source start page*.

In the example we use here the user is presented with five subsequent pages in the Request Builder before submitting the request and forwarding to the Graphics page.

It is important to note that once you have visited the Variables start page the remaining pages appear in the same order, and have the same content, as when starting your request by selecting data source.

3.5 Route 3, Step 1: Variables page

Using a climate variable as your entry point will constrain the selections available in subsequent pages. Note that via this route you can only select a single variable. However, should you select a graphical output you will be able to modify the variable on the *Graphics page.*

Begin by logging in and selecting on the Start a new request option, then select selecting a climate variable first and click the Next button to move to the Variables page, as shown in Figure 3.12.

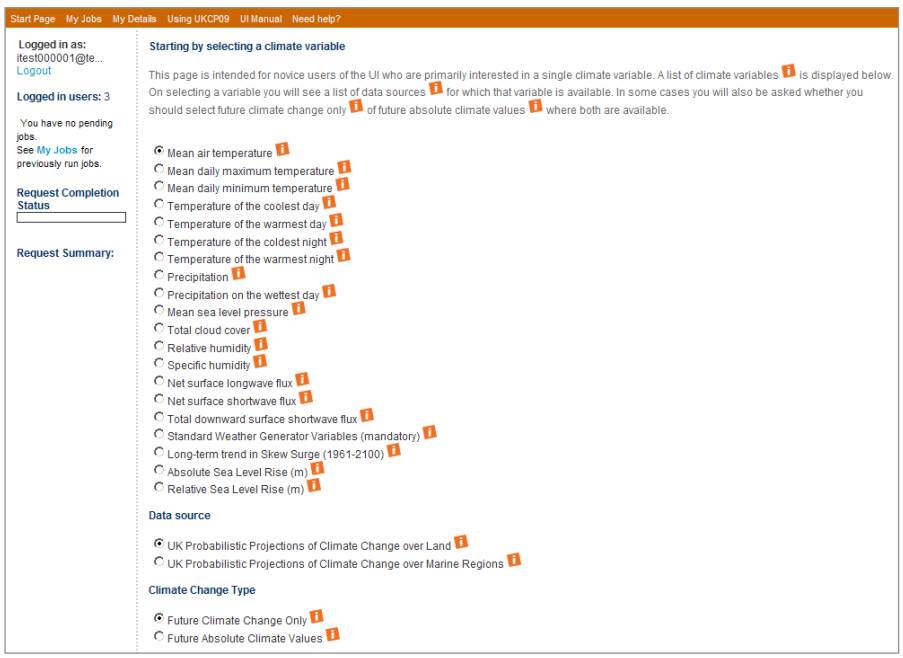


Figure 3.12: Variables start page

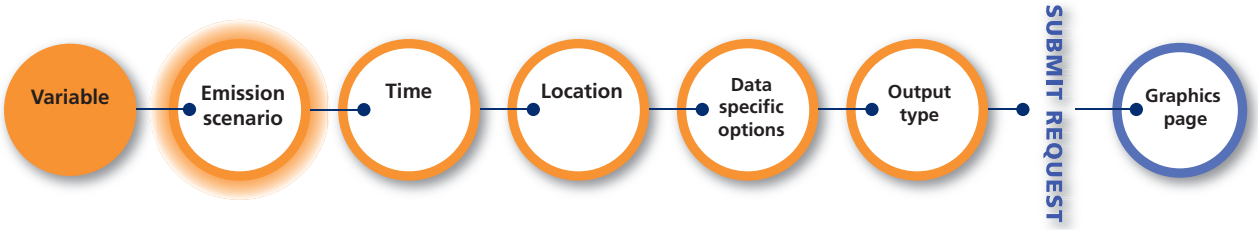
From the variables listed select the first option in the list: *Mean air temperature*.

The next option will then appear below labelled *Data source*. Please select *UK Probabilistic Projections of Climate Change over Land* which will allow you to select *River basins*.

Finally, in the case of the chosen data source you will also be asked to select your *Climate Change Type*. Please select *Future Climate Change Only.* On making this selection an information pop-up will appear explaining the implications of selecting future absolute or change only climate values.

Then click the **Next** button to proceed to the next page.

3.5 Route 3, Step 2: Emissions scenario page



The Emissions Scenarios page (see Figure 3.13) is next to load. This only has one selection but is given its own page because of the importance of understanding the relevance of emissions scenarios when working with UKCP09. Note that this is identical to when beginning a request with a data source.

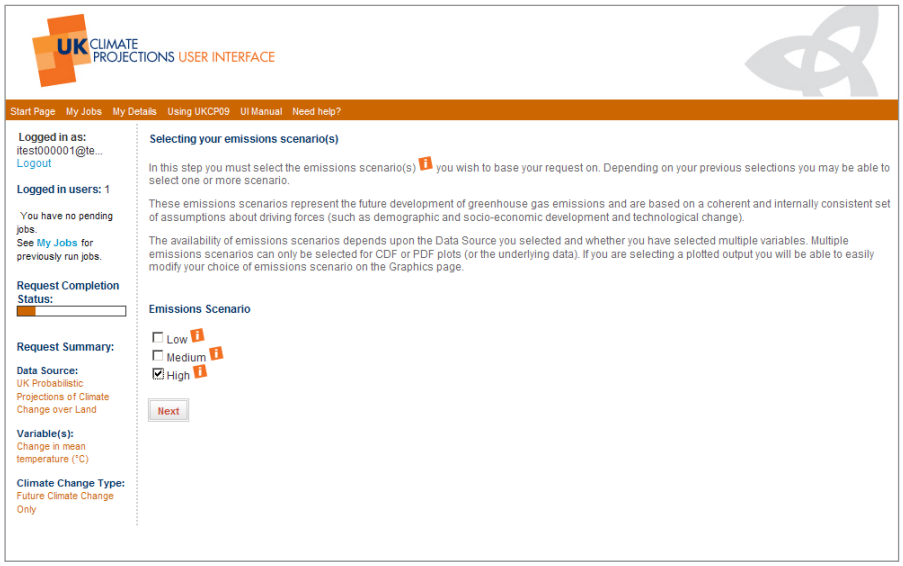
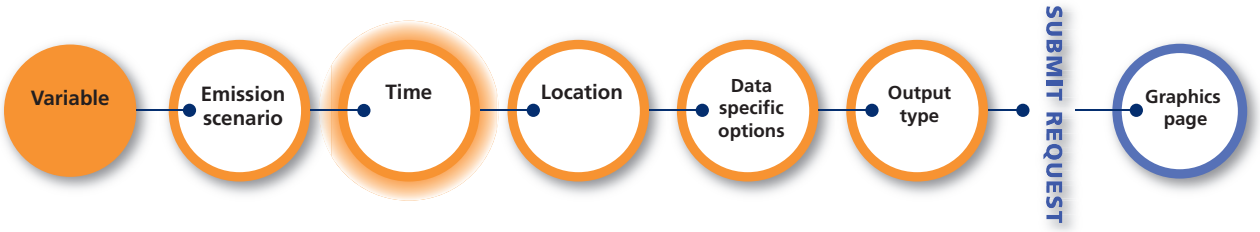


Figure 3.13: Emissions Scenarios page

Select the *High emissions scenario* and click the **Next** button to proceed to the next page.

3.5 Route 3, Step 3: Time page



The Time Selection page (see Figure 3.14) will load next. This provides different options depending on the Data Source. In this case we can select Time Period (a 30-year future time period) and Temporal Averages (month, season or annual period that data has been averaged over with the Time Period). Note that this is identical to when beginning a request with a data source.

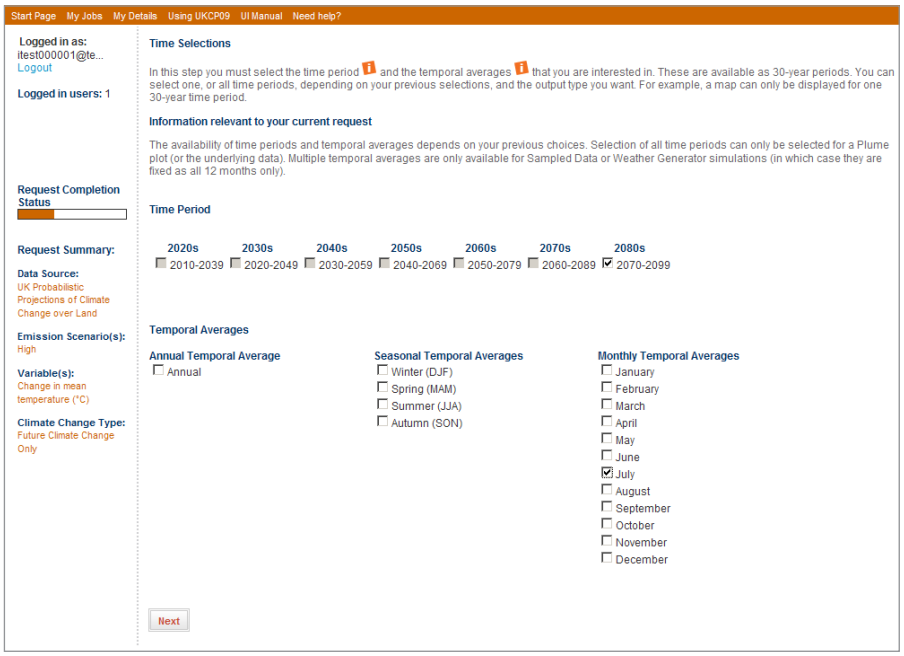


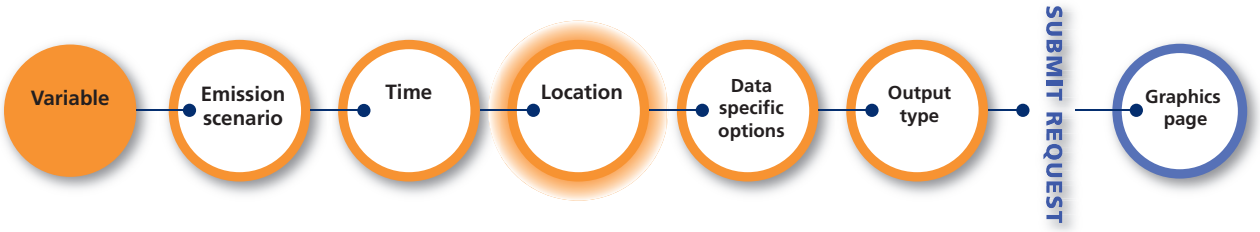
Figure 3.14: What the Time Selection page looks like

Under *Time Period* select: *2070–2099 (representative of the 2080s)*.

Under *Temporal Averages* select: *July*.

Then click the **Next** button to proceed to the next page.

3.5 Route 3, Step 4: Location page



The Location page (see Figure 3.15) allows you to select your location. Depending on your Data Source this can be:

- A single grid box;
- A bounding box (rectangle) encompassing multiple grid boxes;
- An aggregated area (such as a region or river basin); or
- A set of contiguous grid boxes in user-defined shape (Weather Generator only)

Please refer to Chapter 7 for more information about selecting different location types.

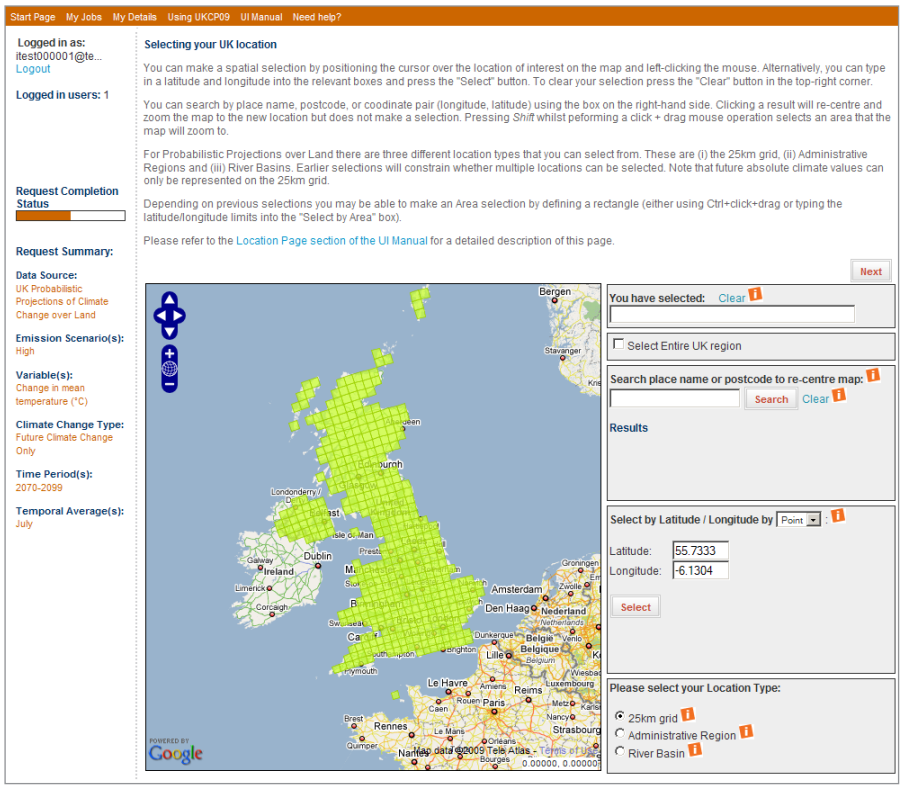


Figure 3.15: An illustration of how the Location page looks

The page loads with the 25 km rotated grid overlay visible. However, we want to select River basins. This can be done in the bottom right hand corner in the box labelled *Please select your Location Type.* Click *River Basin* and the overlay will change to show the various river basins available in UKCP09.

Now move the mouse cursor above Bristol and double-click the left button. The map will zoom in on the Bristol area. Click on a land point near the river Severn and the selected area will be highlighted in orange.

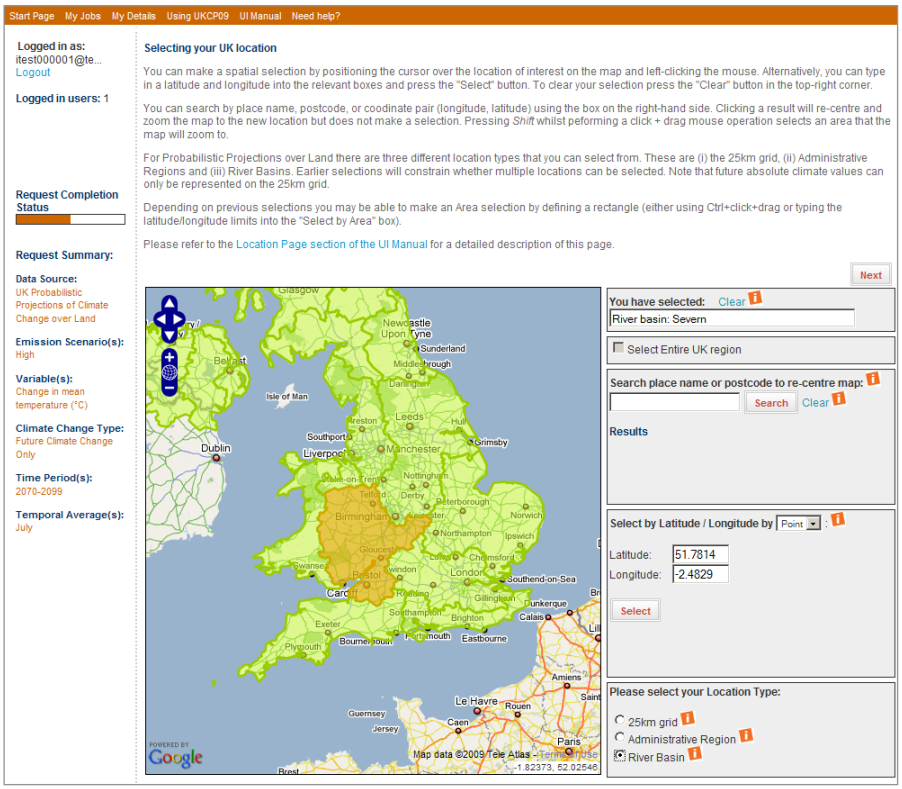
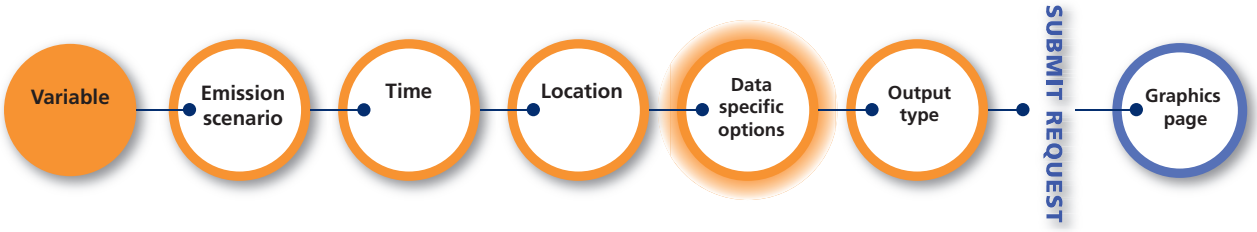


Figure 3.16 Selecting the Severn River Basin

Under the map the *Current selection* label will be populated with what you have selected.

Then click the **Next** button to proceed to the next page.

3.5 Route 3, Step 5: Data source specific selections



For most data sources there is a data source-specific selections page. In the case of *UK Probabilistic Projections of Climate Change Over Land* the page allows you to select between:

- CDF Summary data
- Full Sampled data

The contextual help will tell you more about these options and the consequences of selecting them. Note that selecting *Full Sampled data* will allow further selections to be made for sampling the probabilistic data. In this instance please select the: *CDF Summary data*.

Then click the **Next** button to proceed to the next page.

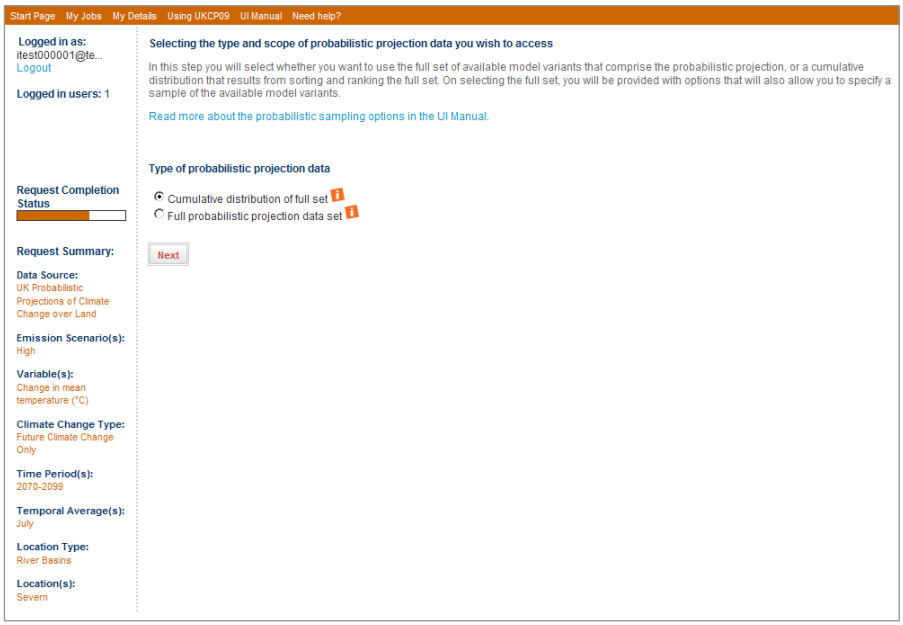
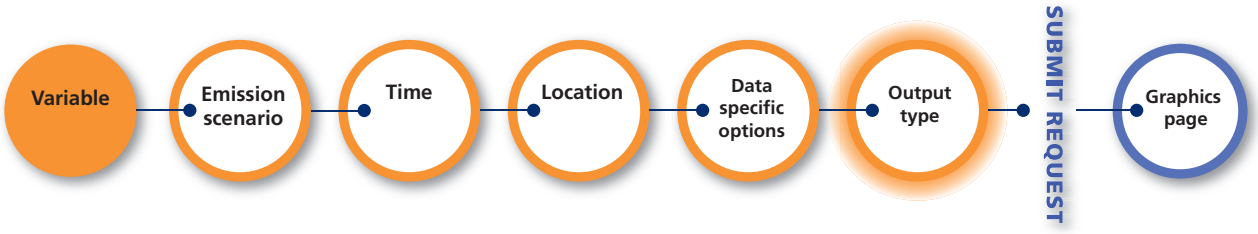


Figure 3.17: Data source 1 specific selections page

3.5 Route 3, Step 6: Output page



The last page in the Request Builder is the Output types page (see Figure 3.18). This allows you to select whether a plot or raw data is required, it also allows selection of data format (raw data only) and other options such as inclusion of a user-defined description of the request for future reference.

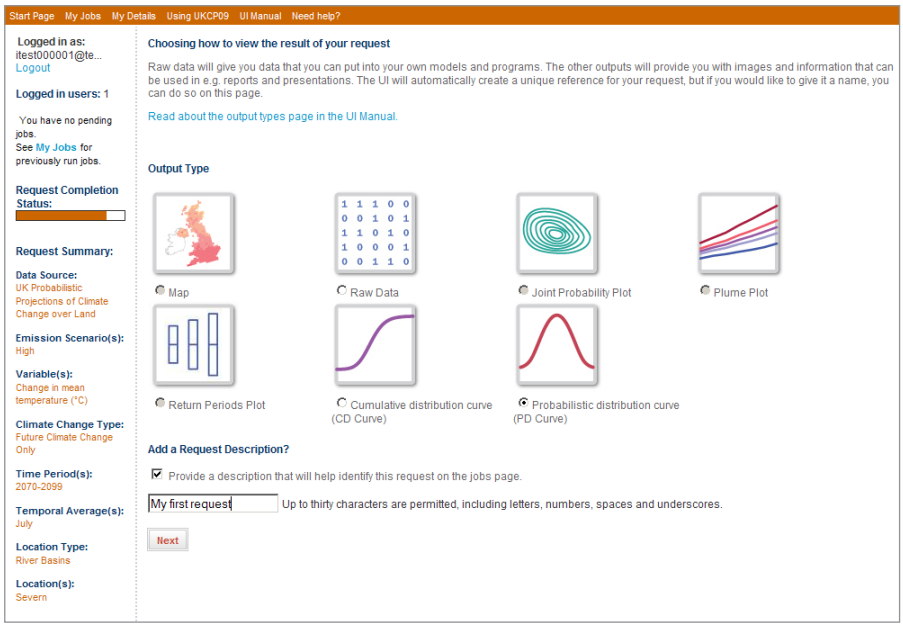


Figure 3.18: Illustration of the Outputs page

Select the *Output Type*: *Line Graph (PDF).*

Then tick the box besides Add a Request Description and insert the description *My first request* into the input box (as shown in Figure 3.19).

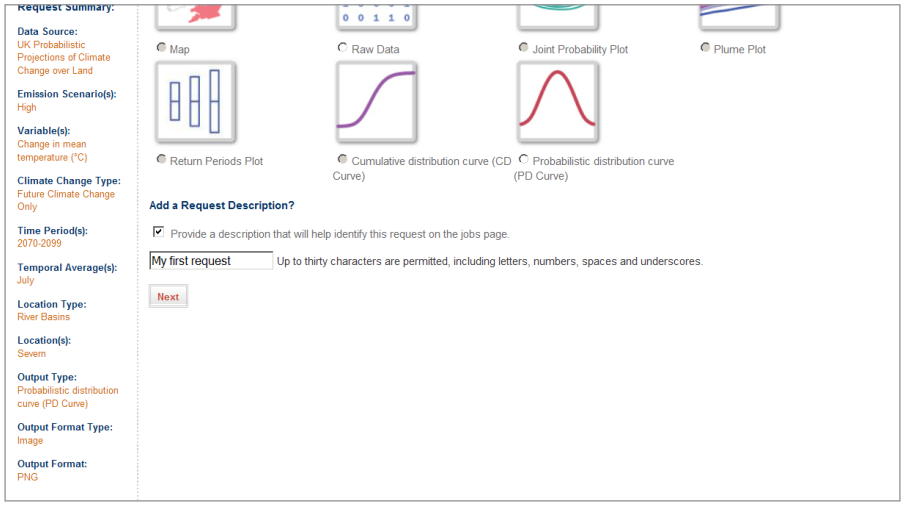
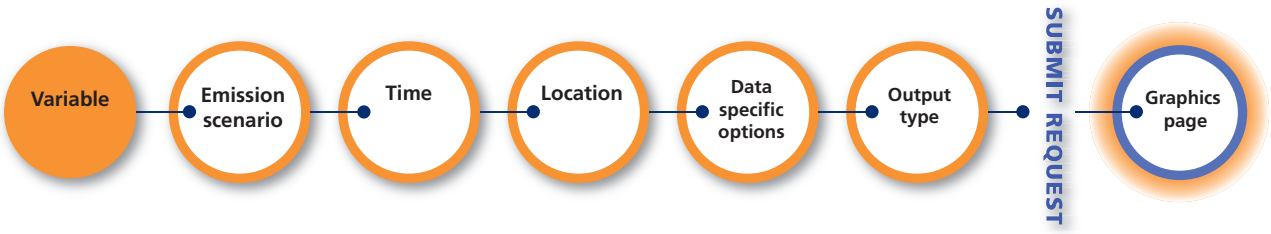


Figure 3.19: Inserting your own Request Description

Then click the **Submit** button to submit the request. The request is for a plot and because it is relatively simple, will be processed immediately by the UI.

If you choose not to provide a request description the UI will generate one for you.

3.5 Route 3, Step 7: Graphics page



Whenever a graph is selected you will be forwarded to the Graphics page (see Figure 3.20) which provides the following functionality:

- Review of the output before downloading final version
- Options to configure the look of the plot (such as font size)
- Options to modify the data request (such as emissions scenario)
- Format options such as image format and size
- Download data option

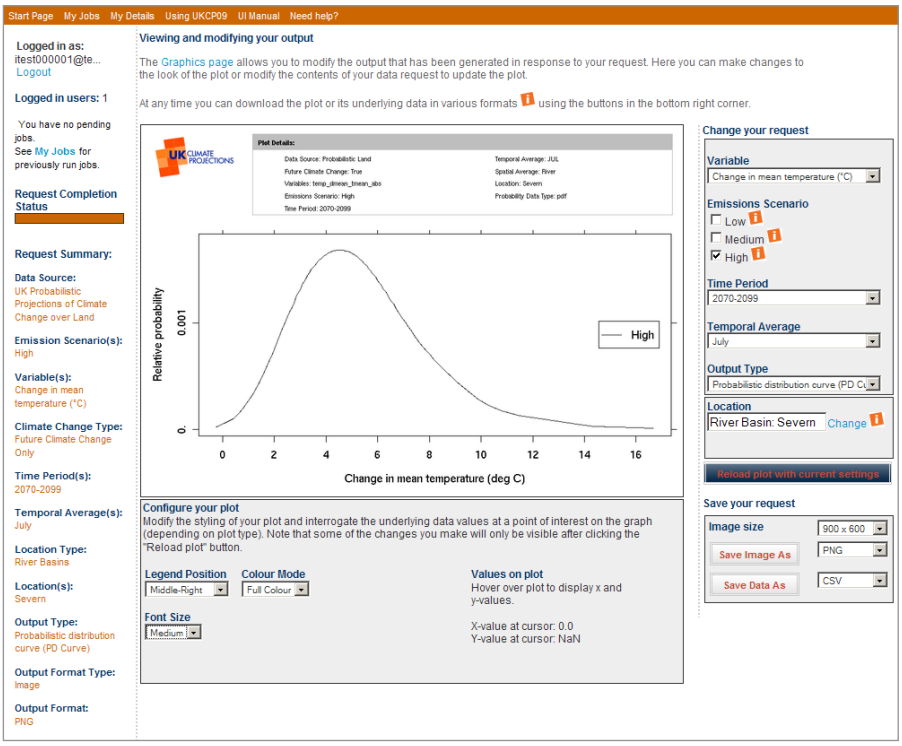
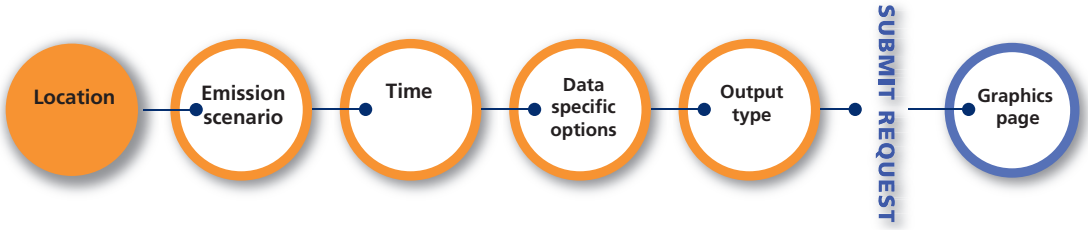


Figure 3.20 Graphics page showing various options that can be modified

3.6 Route 4: Stepping through the pages from location



The third method of building a request is to begin with a single location as the first selection. This will show you which data sources and spatial averages (where relevant) are available for the given location. You will then be able to select a single variable. In the case of *UK Probabilistic Projections of Climate Change over Land* you will also be required to select your Climate Change Type on this page.

Only one location and one variable can be selected on the Variables start page. Should you require an output with multiple locations or variables please use the Data source start page.

In the example we use here the user is presented with four subsequent pages in the Request Builder before submitting the request and forwarding to the Graphics page.

It is important to note that once you have visited the *Location start page* the remaining pages in your route through the request builder will not include the *Location page* which normally appears after the *Emissions scenarios page*. Apart from this one difference the other pages will appear in the same order, and have the same content, as when starting your request by selecting data source.

3.6 Route 4, Step 1: Location start page

When choosing to start your request by location you are navigated to the *Location start page*. This page allows you to select a single location. On selecting the location you will get the choice of data source and temporal average if relevant. On selecting the data source you will then be asked to choose a variable. For *UK Probabilistic Projections of Climate Change over Land* you will also have to choose the *Climate Change Type*.

Begin by logging in and selecting on the *Start a New Request* option, then select selecting Data Source first and click the Next button to move to the Data Source page, as shown in Figure 3.21.

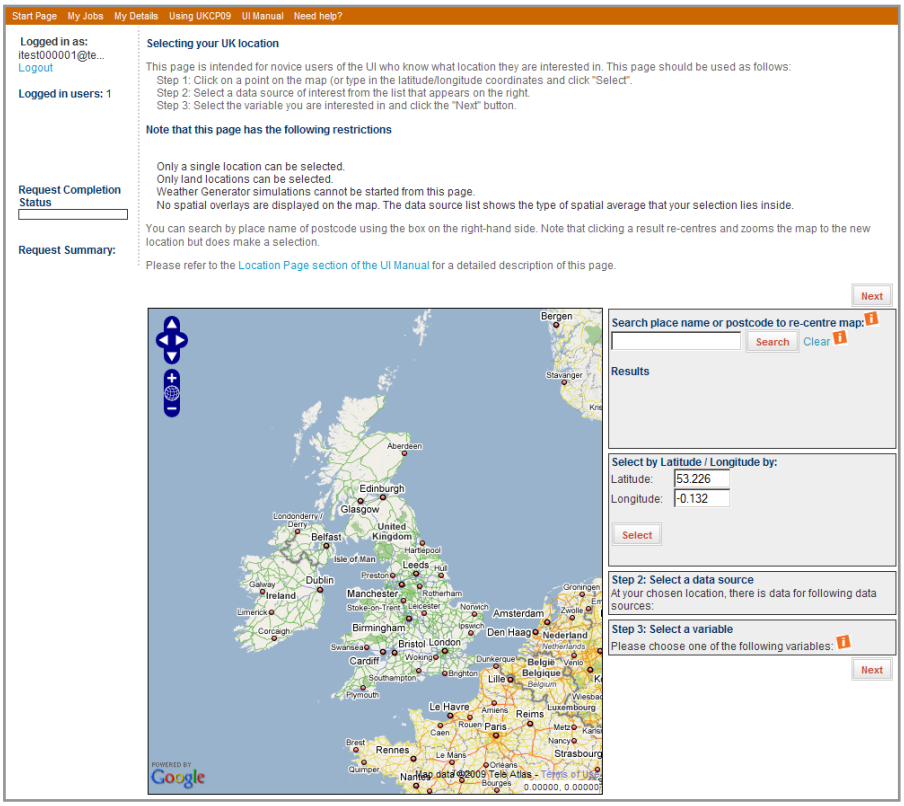


Figure 3.21: Location start page

In this example we are looking for the River basin of the Severn. Please type Severn into the box to the top right of the map and click the *Search* button beside it. The results of your search will be displayed beneath the box. Click on the top result (Stourport-on-Severn (Worcestershire)) and the map will zoom in on the location you have clicked on. **Note that no selection has been made at this stage.**

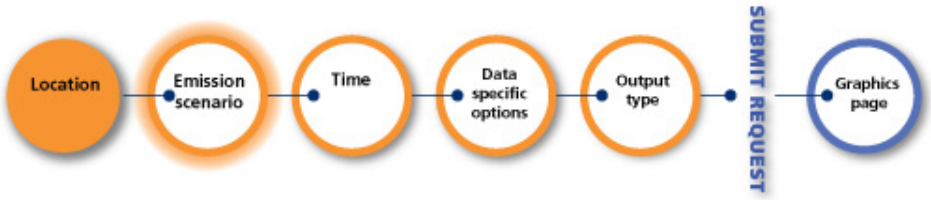
Click on the map near Gloucester and the box labelled Step 2: Select a data source will show various options. These represent the possible data that can be selected for that location. Select the option relating to the Severn River Basin.

The box labelled *Step 3: Select a variable* will now be populated with a list of the available variables. Select the first on the list: *Change in mean temperature (°C)*.

Note that only one location and only one variable is available using the Location start page. If you wish to select multiple locations or variables please begin your request starting with data source.

Then click the **Next** button to proceed to the next page.

3.6 Route 4, Step 2: Emissions scenario page



The Emissions Scenarios page (see Figure 3.22) is next to load. This only has one selection but is given its own page because of the importance of understanding the relevance of emissions scenarios when working with UKCP09. Note that this is identical to when beginning a request with a data source.

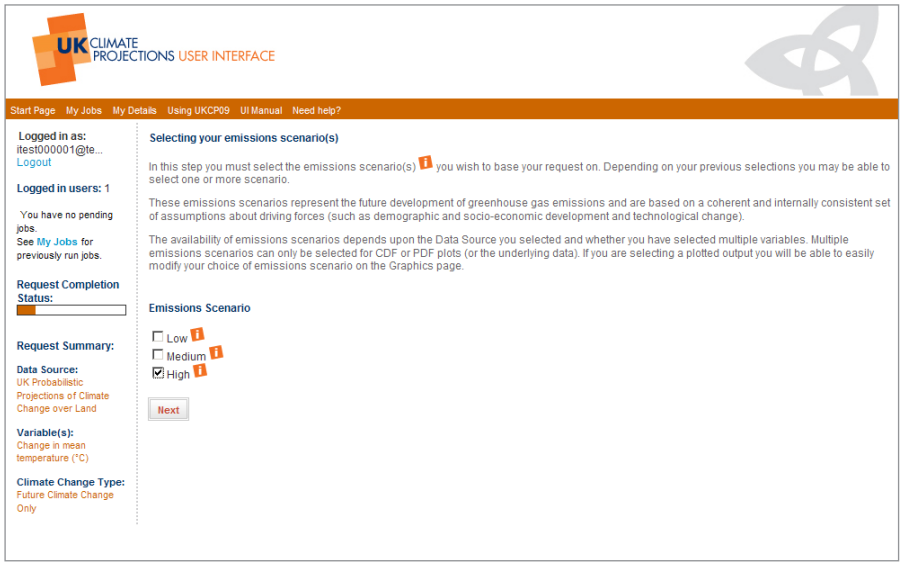
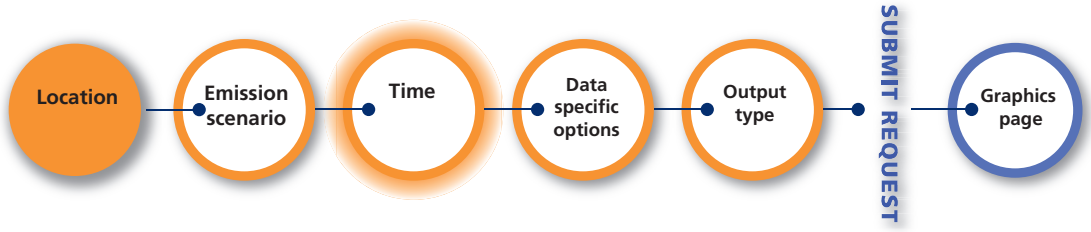


Figure 3.22: Emissions Scenarios page

Select the *High emissions scenario* and click the **Next** button to proceed to the next page.

3.6 Route 4, Step 3: Time page



The Time Selections page (see Figure 3.23) will load next. This provides different options depending on the Data Source. In this case we can select Time Period (a 30-year future time period) and Temporal Averages (month, season or annual period that data has been averaged over with the Time Period). Note that this is identical to when beginning a request with a data source.

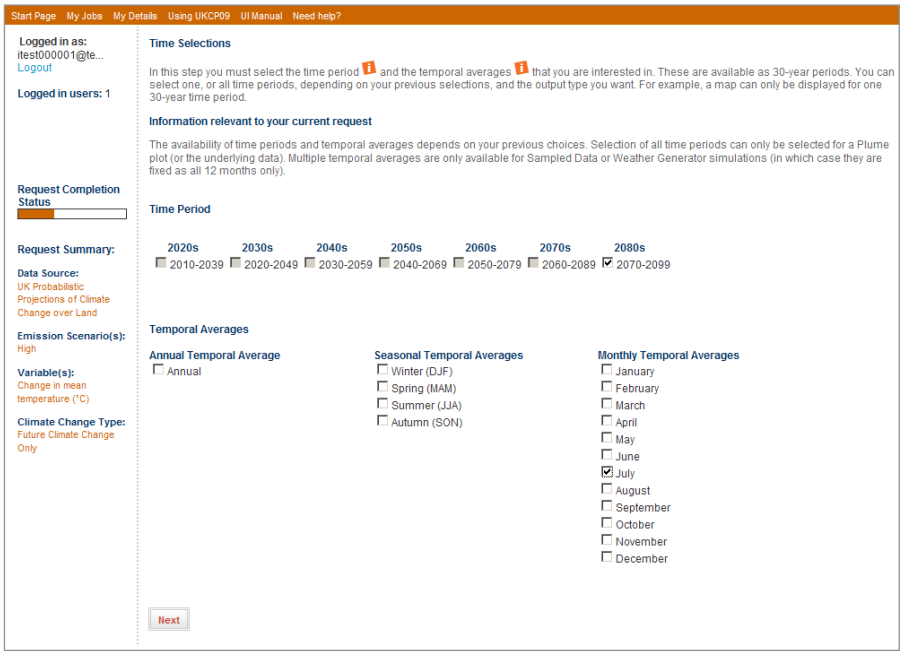


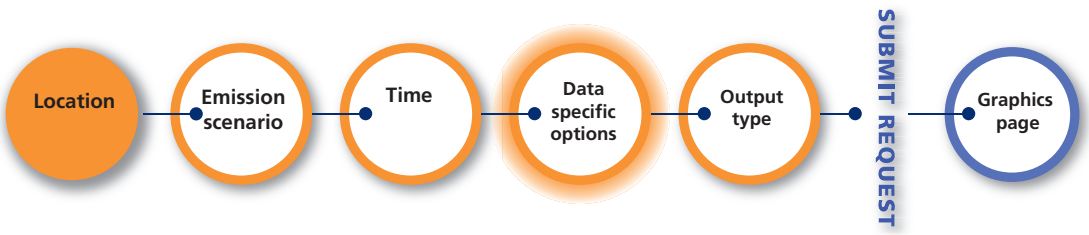
Figure 3.23: What the Time Selection page looks like.

Under *Time Period* select: *2070–2099 (representative of the 2080s)*.

Under *Temporal Averages* select: *July*.

Then click the **Next** button to proceed to the next page.

3.6 Route 4, Step 4: Data source specific selections



For most data sources there is a data source-specific selections page. In the case of probabilistic projections over land the page allows you to select between:

- CDF Summary data
- Full Sampled data

The contextual help will tell you more about these options and the consequences of selecting them. Note that selecting *Full Sampled data* will allow further selections to be made for sampling the probabilistic data. In this instance please select the: *CDF Summary data*.

Then click the **Next** button to proceed to the next page.

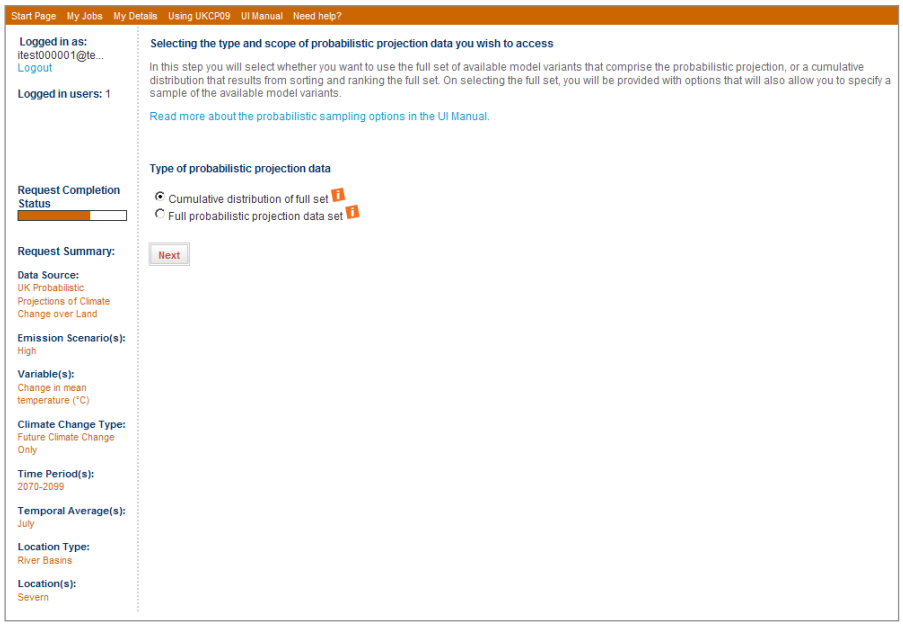
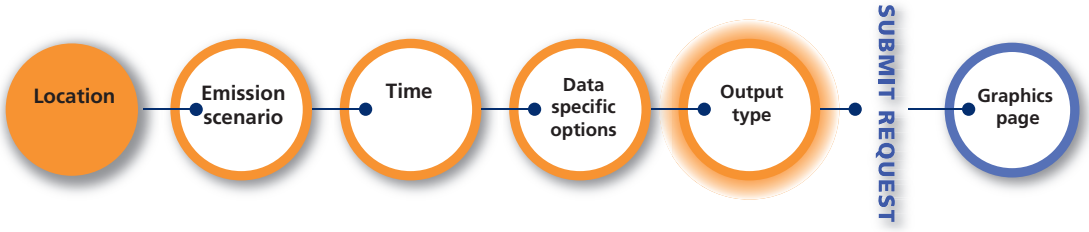


Figure 3.24 Data source 1 specific selections page.

3.6 Route 4, Step 5: Output page



The last page in the Request Builder is the Output Types page (see Figure 3.25). This allows you to select whether a plot or raw data is required, it also allows selection of data format (raw data only) and other options such as inclusion of a user-defined description of the request for future reference.

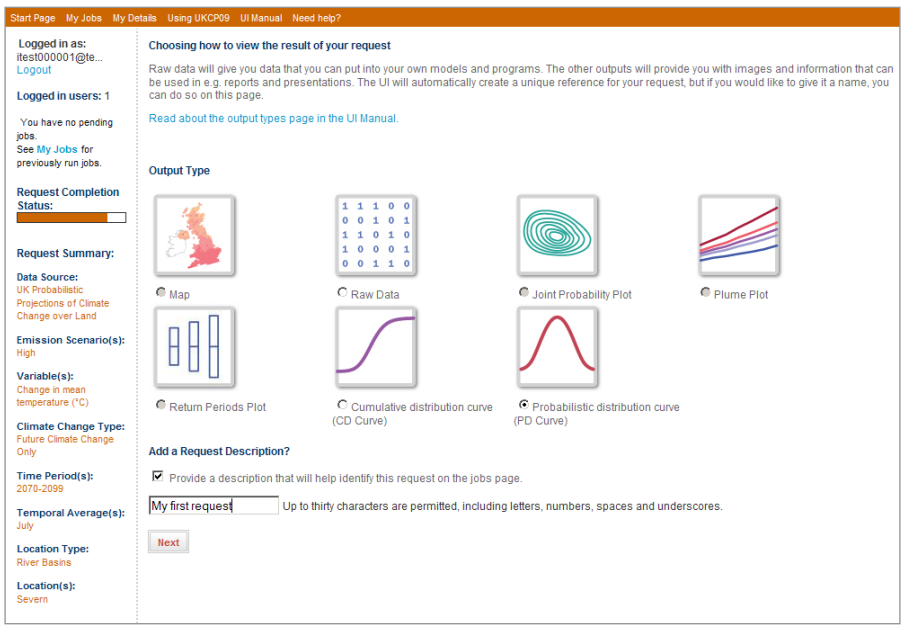


Figure 3.25: Illustration of the Outputs page

Select the *Output Type*: *Line Graph (PDF)*.

Then tick the box besides *Add a Request Description* and insert the description *My first request* into the input box (as shown in Figure 3.26).

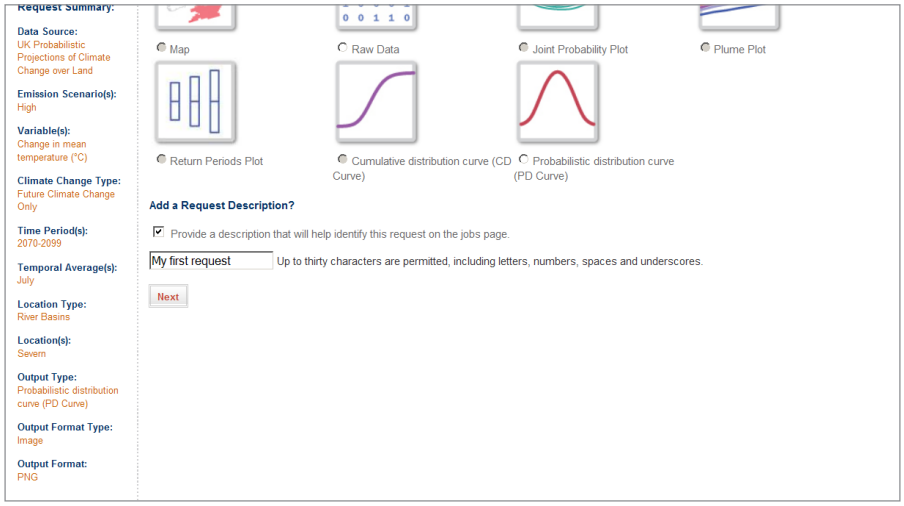
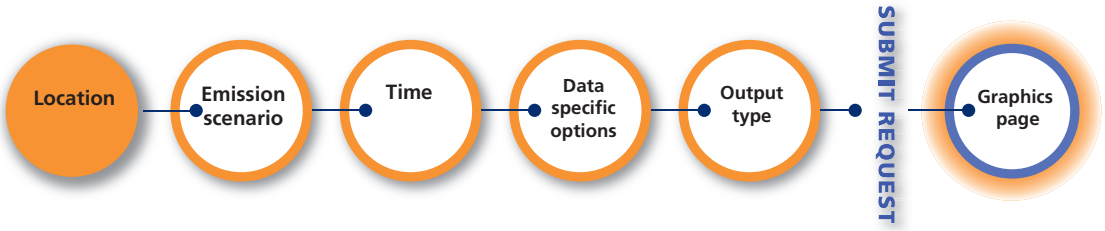


Figure 3.26: Inserting your own Request Description

Then click the **Submit** button to submit the request. The request is for a plot and because it is relatively simple, will be processed immediately by the UI.

If you choose not to provide a request description the UI will generate one for you.

3.6 Route 4, Step 6: Graphics page



Whenever a graph is selected you will be forwarded to the Graphics page (see Figure 3.27) which provides the following functionality:

- Review of the output before downloading final version
- Options to configure the look of the plot (such as font size)
- Options to modify the data request (such as emissions scenario)
- Format options such as image format and size
- Download data option

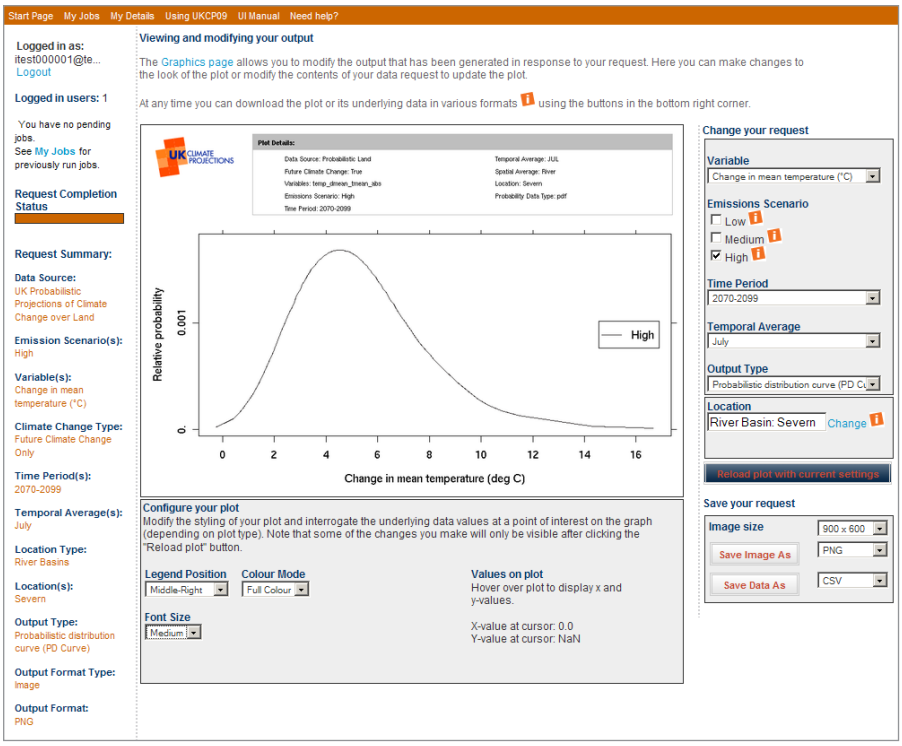


Figure 3.27: Graphics page showing various options that can be modified

4 The graphics page

This and the following chapter provide an overview of how you can work with outputs generated by the User Interface. This chapter discusses the most powerful page on the UI – the Graphics page. It allows you to view and modify graphical outputs. The following chapter details the Jobs page and the download and post-processing of previous outputs.

Introducing the Graphics page

The Graphics page has been designed to provide you with a quick-look at image requests, allowing minor modifications and re-load into the same page. It was introduced in Chapter 3 and this Section builds on that introduction. Figure 4.1 shows the layout of the Graphics page.

One of the most powerful aspects of the Graphics page is that you can modify many aspects of your request and re-load the plot directly onto the page. It also allows you to download publication-quality versions of the plots or even access the underlying data in various formats.

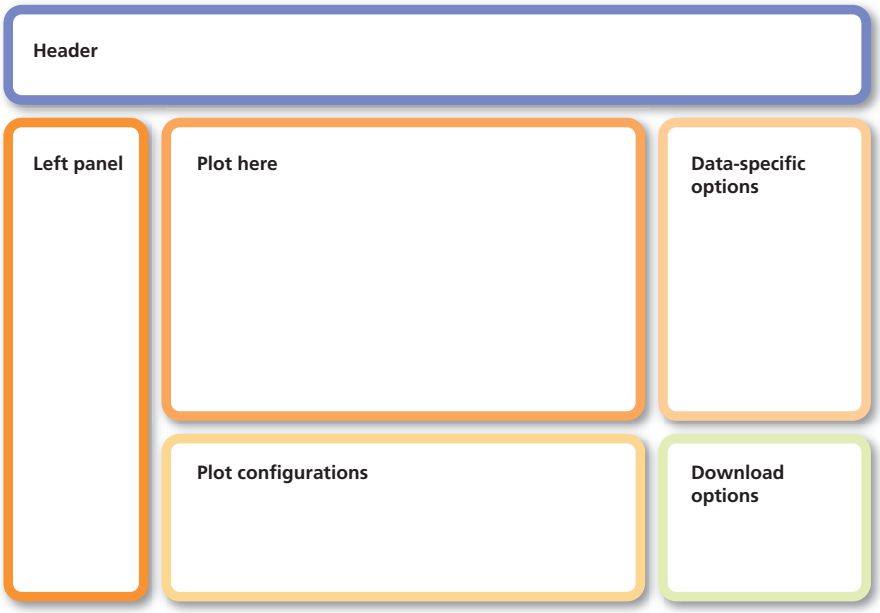


Figure 4.1: The layout of the Graphics page

The Work Panel is split into four Sections:

Plot section: displaying the plot, or interactive map, of the data requested. In many cases hovering over the plot will provide information to the user.

Data-specific options: displaying many of the options making up the current request.

Plot configuration options: displaying options regarding how the plot is conFigured.

Download options: relating to download of data/image, format and size.

4.1 Modifying and re-loading your plot

The Graphics page has a Reload facility that allows the user to request an update to the plot displayed on the screen. Modifications can be made to the actual data request via the Data-specific options and the look of the plot via the Plot configuration options. Once the required options have been selected clicking then the plot will re-load the new image into the plot section of the page.

When viewing a map output

When you have chosen a map output an interactive-map will display the data in the centre of the page. Dragging the map with your mouse cursor will change the location in focus and will automatically reload the visible data. Zooming in / out via the "+" / "-" buttons will also reload the visible data. However, any other changes will only be updated when you click on the Reload map with current settings button on the right hand panel. Note that clicking Save Image As or Save Data As will also update the data map on the screen as well as providing a file to download.

When viewing a graph output

When you have chosen a graph output a reduced-size version of the output will be displayed in the centre of the page. Any other changes that you wish to make to the plot will only be updated when you click on the *Reload plot with current settings* button on the right hand panel. Note that clicking *Save Image As* or *Save Data As* will also update the data map on the screen as well as providing a file to download.

Re-selecting your location

Depending on the request the user may be able to select a different location in the Data-specific options. To change the selected location click the *Change* link to the right of the Location box in the right-hand panel. Selection is made via a modal window that presents the map-interface as shown in the Locations page (see Chapter 6).

4.2 Plot download options

If you wish to download a full-resolution plot you can do so by clicking the *Download Image As* button. You will be prompted where to save the file on your local system. Note that image files can be downloaded in the following formats:

- PNG (.png)
- JPEG (.jpg)
- Postscript (.ps)
- Adobe PDF (.pdf)

For PNG and JPEG the user has the option of specifying the height and width of the plot in the Image size box. For Postscript and PDF these are not relevant since they are vector formats.

NOTE: If you wish to use the plots in presentations or reports you are advised to download the actual high-resolution plot files rather than saving the thumbnail plot on the screen.

4.3 Downloading the underlying data

For any image visible on the Graphics page you can choose to select the underlying data used to generate the plot (with the exception of PDFs, these are for visual reference only and users will be provided with the CDF data if they select download of raw data). The data can be downloaded in CSV or CF-netCDF format. These formats are described in Chapter 5.

To save the underlying data click the Download Data As button. You will be prompted where to save the file on your local system.

Hover-over plot widgets

Many of the plots display an area of *X* vs *Y* axes. In most cases, this Section of the plot can be hovered over to identify the *X* and *Y* values at a given pixel. Figure 4.2 shows an example of this functionality. Note that it is not appropriate to show these values for certain plot types.

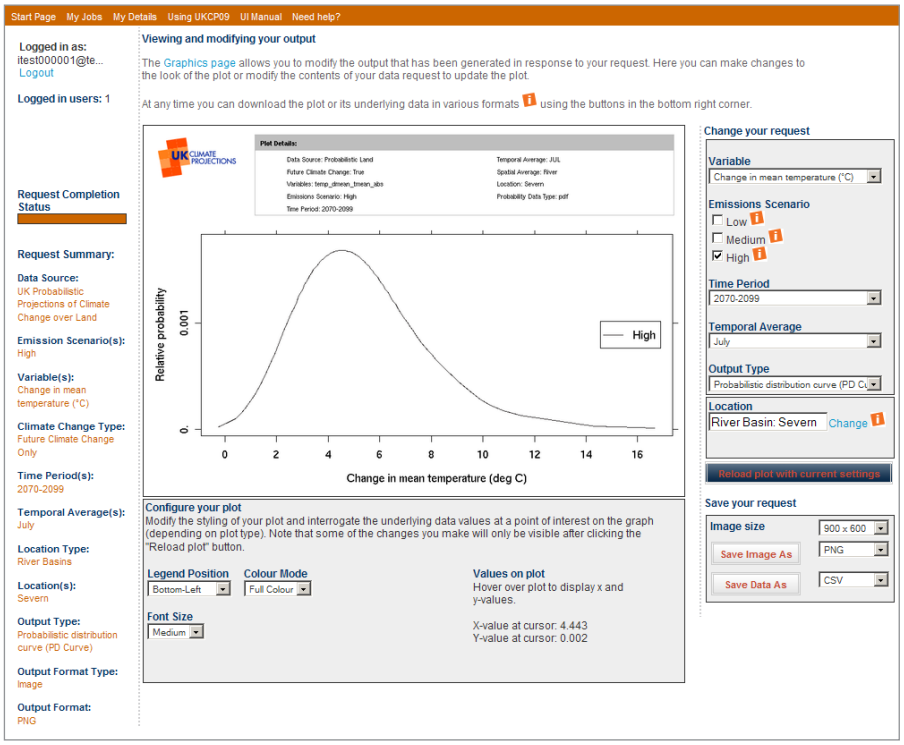


Figure 4.2: Hover over a plot with the cursor to view *X* and *Y* values

4.4 Map interface for map outputs

For Map plot requests you will be presented with an interactive map-interface for viewing the output (see Figure 4.3). This map is controlled in the same way as that on the Location page. More information about using it can be found in Chapter 7.

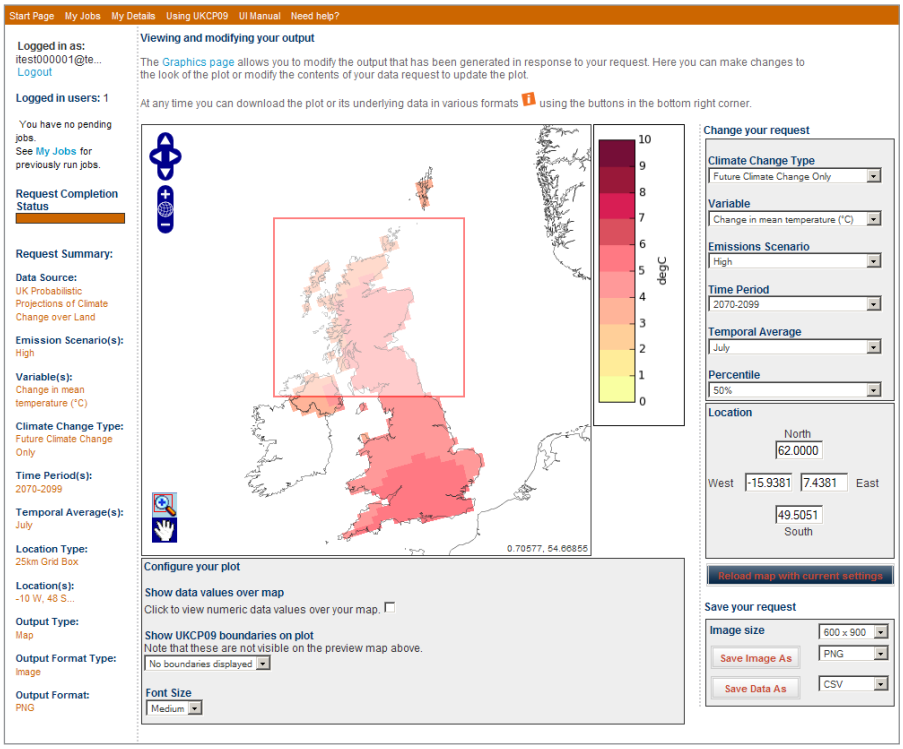


Figure 4.3: Map-interface to view data on Graphics page

Note that you can make a new area selection by holding down the Shift key and clicking a corner of the rectangular area you wish to select. Then drag the cursor to the opposite corner. The map will be re-centred and zoomed if necessary to show your new selection. On downloading a plot or data file this selected area will be provided in the output file.

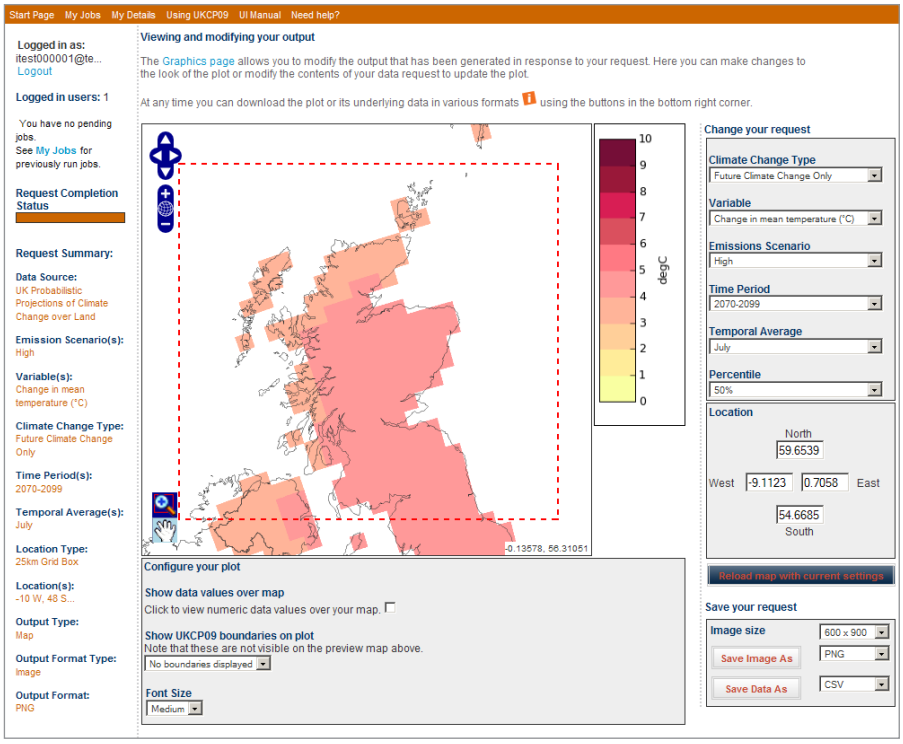


Figure 4.4: Using shift, click and drag to select a new area

4.5 GIS format (Shapefile) for mapped data

For mapped data you have an additional choice of data output format. Mapped data can be downloaded as ESRI Shapefiles. Note that selecting a Shapefile will only download the content on the map that is visible.

4.6 Viewing data values on the map

When viewing data a map on the Outputs page it is possible to view the data values within each grid box. This option can be enabled by clicking the checkbox under the map labelled *Click to view numeric data values* over your map. Figure 4.5 shows an example of this feature in action.

Users of Internet Explorer 6 should note that this feature is not available on that particular web browser.

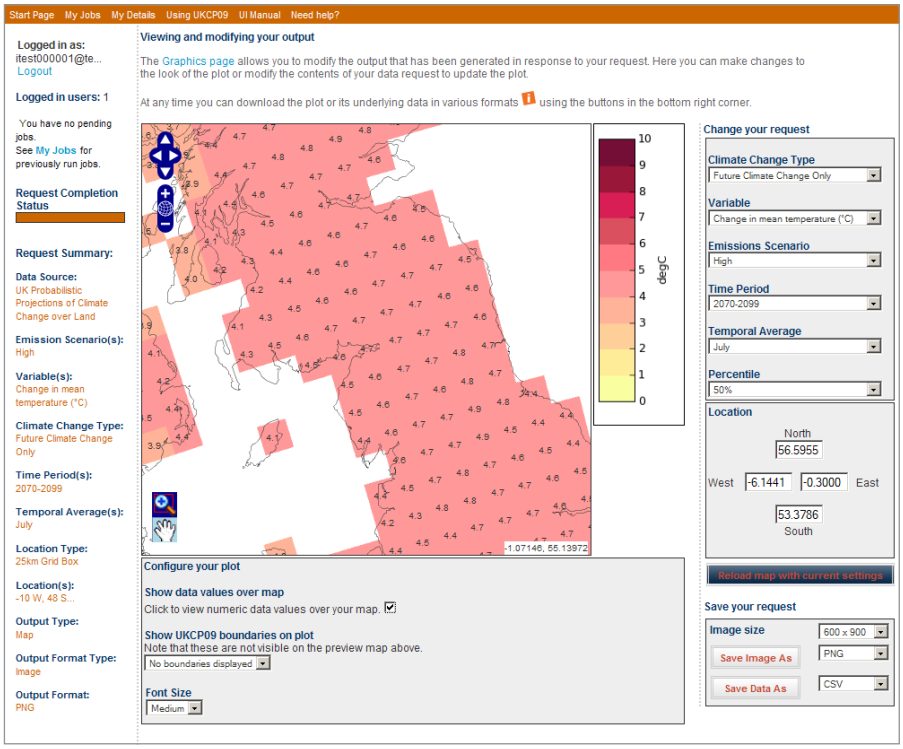


Figure 4.5: Showing data values within each grid point on the interactive map

4.7 Limitations of the Graphics page

Options depend on Output Type, Data Source and Variable

It is important to note that the options visible on the Graphics page result from the Data Source, Probability Data Type (where applicable) and Output Type selected. Users should be aware that different options and constraints will be displayed depending on the contents of the current request.

You cannot change everything!

Note that by design the Graphics page does not allow the user to generate a completely different type of request. Some key elements, such as Data Source, are not selectable on the Graphics page. Users wishing to start a new request should click the *Start page* link on the Links Bar.

Modifying some selections will reset others

Please note that the data-specific selections are dependent upon each other. For example changing *Climate Change Type* will modify the variables available and changing the Variable will modify the available temporal averages. Some of the drop-down lists will therefore be reset after each change you make. As a result the ***values of the data-specific selections should be reviewed after any changes*** to ensure that the request is as required.

5 The Jobs page

The purpose of the *Jobs page* is to allow the user to view, download, and post-process outputs from previous jobs. The UI keeps a temporary store of previous outputs so users can return to the this page to find old outputs as well as jobs that have just been run (see Appendix D for more details).

The structure of the Jobs Page is shown in Figure 5.1.

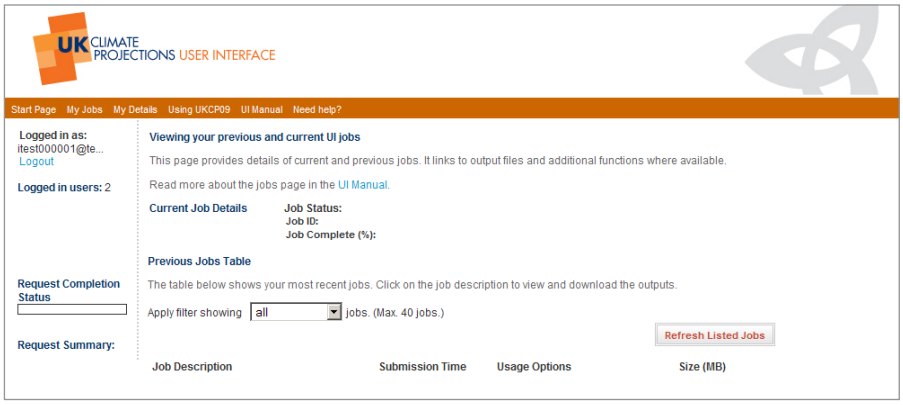


Figure 5.1: The Jobs Page

Viewing (offline) jobs running

If a user has submitted an offline job then this is displayed in the Jobs page with some indication of how the job is progressing. More details on offline jobs is available in Appendix C. Note that each user can only run one offline job at any one time.

Cancelling your offline job

When running an offline job the user may decide that the request is no longer of interest. As a result the user can cancel the offline job by clicking the *Cancel Current Joblink*. The UI will instruct the job scheduler to remove the job and delete the outputs. The user will then be allowed to submit a new request for an offline job.

Viewing previous jobs

The main Section of the Jobs Page is a list of previous jobs that the user has run. For each job the UI provides the following details:

- Job Description – either user-defined or automatically generated
- Submission Time – the date and time the job was submitted
- Usage Options – whether the URL can be shared, the job re-submitted or post-processed
- Size (MB) – the size of the output file(s) in megabytes

By clicking on the Job Description the user can open a dialogue window showing a list of the outputs available from that job. This includes the unique job ID as well as information about the output files. All outputs are delivered to the user as zip files. This dialogue window shows the zip file contents and size, along with the actual data, image and/or metadata files contained inside the zip files. Figure 5.2 shows the output summary dialogue window.

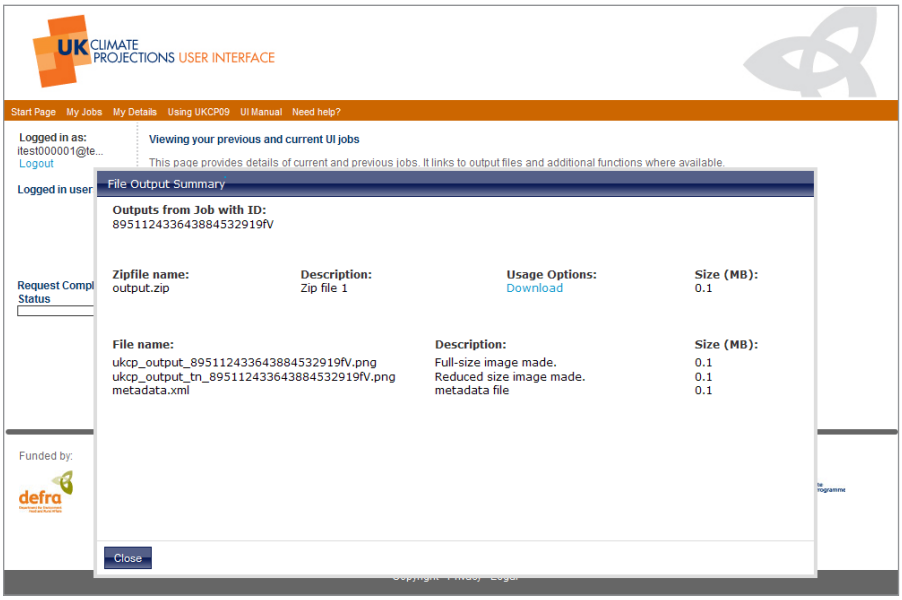


Figure 5.2: The file output summary dialogue window

Downloading output files

Under the *Usage Options* for all zip files there will be a *Download* link that allows you to download the outputs directly to your personal computer.

Sharing and re-using UI jobs

The *Usage Options* for a previous job (rather than a zip file) you may see the option *Share*. If you hover over this link a dialogue window will appear containing a re-usable URL that represents the exact request that generated that specific job. This URL can be copied and shared with other UI users, or you may re-use it yourself, to replicate the outputs.

5.1 Sending Weather Generator output to the Threshold Detector

The Threshold Detector has not yet been released. This Section will be populated when the product is released.

5.2 Sending Threshold Detector output to the graphics page

The Threshold Detector has not yet been released. This Section will be populated when the product is released.

5.3 Handling Zip files

The UI provides all its outputs in zip files. A zip file is a compressed format that reduces the size of the files and also allows multiple files to be packaged into one file.

The reasons for choosing this approach were as follows:

- A UKCP09 Metadata file can always be delivered with each output.
- Multiple output files can be downloaded in one go.
- Output files will be smaller if zipped. This reduces download times and bandwidth pressures.
- Most desktop computers include a tool for unpacking zip files.

See the *Handling zip files* Section of the UKCP09 Outputs and Metadata Specification for more information.

5.4 Data formats & metadata

All UKCP09 outputs are delivered in zip files. Within a zip file the user will receive:

- An image or data file
- A metadata file based on the request issued
- Possibly additional data files in case of large requests
- Possibly some files containing ancillary information
- A copyright file

Image files are available in the following formats:

- PNG (.png)
- JPEG (.jpg)
- Postscript (.ps)
- Adobe PDF (.pdf)

Data files are available in the following formats:

- Comma-separated variables (.csv)
- CF-netCDF (.nc)

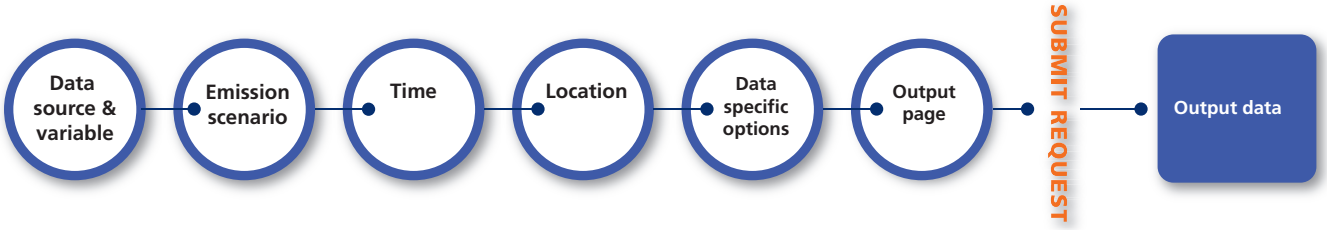
Further information on the formats and handling of metadata in UKCP09 is available from the UKCP09 Outputs and Metadata Specification.

6 Request pathways

If you have not used the UI before, you are encouraged to read this Section as it provides a guide to stepping through the Request Builder starting at each of the different Data Sources. In particular it focuses on why certain choices are restricted by other choices and how this will affect options further along the request building process.

Once you understand the rules that underpin the selections on each page it is straightforward to navigate to the output type of your choice with ease.

6 Request pathway 1: Data source – UK probabilistic projections of climate change over land



Choosing Data Source 1 (UK Probabilistic Projections of Climate Change over Land) provides you with access to the largest number of possible outputs:

- PDF
- CDF
- Map at a chosen percentile
- Plume plot
- Joint Probability Plot
- CDF Data
- Full Data

This Section will discuss how various choices will take you to each of these output types. Figure 6.1 indicates the Request Builder stages involved when selecting Data Source 1. You can click on the links in the left-hand panel to view the details for each of the Request Builder pages below:

- Data source/variables page guidance
- Emissions scenario page guidance
- Time page guidance
- Location page guidance
- Probabilistic projections specific page guidance
- Output types page guidance

6 Request pathway 1: Data source & variables page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Which Climate Change Type should I choose?**	The probabilistic projections over land can be expressed relative to a baseline period (1961–90). The main UKCP09 probabilistic outputs are supplied in this form, and are labelled as *Future Climate Change Only*. All variables are available for this climate change type. Variables for which climatological data was available (based on observational records) have been combined with Future Climate Change values to generate *Absolute Future Climate Values*. This is available for less variables and only on the 25 km grid. All other selections will be the same regardless of the option chosen.	Glossary: Future climate change only Glossary: Future absolute climate values
2	**Why are variables greyed out depending on my selections?**	Some users wish to examine joint-probabilities between multiple variables. The first method is simply to select two variables and to select a Joint-Probability Plot. The second method is to download multiple variables as Sampled Data and to examine the relationship between them. The method that generates the sampled data incorporates a multivariate analysis that can only process a certain number of variables simultaneously. This limitation means that the variables have been processed in two separate batches. Examining joint-probabilities between variables in different batches is neither recommended nor is it allowed by the UI. To assist you in understanding this constraint the UI will grey out variables in separate batches when the first variable is selected. To select from the other batch the user must de-select all variables before re-selecting those required.	Glossary: Batch

6 Request pathway 1: Data source & variables page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
3	**Some variables are not defined on all temporal averages**	Most of the variables are defined on all months, seasons and annual temporal averages. There are a few exceptions as shown below. The following variables are defined for seasons only: • Temperature of the coolest day • Temperature of the warmest day • Temperature of the coldest night • Temperature of the warmest night • Precipitation on the wettest day	Glossary: Temporal Average
4	**What are the consequences of selecting different numbers of variables?**	Users who wish to download Sampled Data are able to select as many variables as allowed. Users wishing to view a Joint-Probability plot must select exactly 2 variables. Users wishing to access any other output type should select only one variable.	Glossary: Output Type

6 Request pathway 1: Emissions scenario page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What output types are available if I select more than one emissions scenario?**	Selecting more than one emissions scenario will limit downstream selections to a PDF or CDF plot. All other output types will be unavailable.	Glossary: Emissions scenarios Glossary: PDF plot Glossary: CDF plot
2	**Why can't I select multiple emissions scenarios?**	If you have selected more than one variable then only one emissions scenario can be selected. This is compatible with Sampled Data and in the case where exactly 2 variables have been selected with Joint Probability plots.	Glossary: Sampled data Guidance: Joint Probability plots

6 Request pathway 1: Time page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What happens if I select all time periods?**	Selection of all time periods is compatible with the Plume Plot output type only.	Glossary: Plume Plot Glossary: Time period
2	**Why can I only select a single time period?**	Selection of multiple time periods is only available to Plume Plot outputs. You have selected either multiple variables or multiple emissions scenarios which cannot be rendered as a Plume Plot.	Glossary: Plume Plot Glossary: Time period
3	**What are the consequences of selecting multiple temporal averages?**	Multiple temporal averages can only be selected for users wishing to download Sampled Data. Any plot options must select a single temporal average only.	Glossary: Sampled Data Glossary: Temporal average
4	**Why can I select only one temporal average?**	A previous multiple selection of emissions scenario or time period is not compatible with the previous choices. Download of Sampled Data is the only output type that is compatible with multiple temporal averages.	Glossary: Sampled Data Glossary: Temporal average
5	**Why can I not select from all temporal averages?**	Most of the variables are defined on all months, seasons and annual temporal averages. There are a few exceptions as shown below. The following variables are defined for seasons only: • Temperature of the coolest day • Temperature of the warmest day • Temperature of the coldest night • Temperature of the warmest night • Precipitation on the wettest day	Glossary: Temporal average

6 Request pathway 1: Emissions scenario page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can't I select multiple grid boxes?**	Multiple grid box selection for probabilistic projections over land is only compatible with a Map plot. This output type is only available when only one value has been selected for each of the following: • Variable • Emissions Scenario • Time Period • Temporal Average	Glossary: Map plots
2	**Can I save my spatial selection and re-use it?**	In the current version of the UI there is no option for the user to save and upload the grid box selection.	
3	**There is no 25 km grid box over my location. How do I select it?**	The 25 km rotated pole grid is used to describe the land projections. There are some locations that are not covered by a grid box. In order to include these locations the UI will automatically select the nearest vaild grid box to the land point clicked by the user.	Description of 25 km grid

6 Request pathway 1: Probabilistic projections-specific page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What are the consequences of choosing each Probability Data Type? Users wishing to get the full Sampled Data output that can be downloaded in data files (in CSV or CF-netCDF format) should select that option. If you wish to access any other data output or a plot select the CDF Summary Data option.**	Users wishing to get the full Sampled Data output that can be downloaded in data files (in CSV or CF-netCDF format) should select that option. If you wish to access any other data output or a plot select the *CDF Summary Data* option. The *CDF Summary Data* is a series of cumulative distributions, having 107 points, instead of the 10,000 samples in the Sampled Data. This *Summary Data* is used as the basis for generating a number of UI products. Each of the 107 points represents the probability of a change for a certain variable for a given future scenario based on the temporal and spatial selections made. The most commonly requested probability will be 10% ("very likely to be exceeded"), 50% ("equally likely to be exceeded as not") and 90% ("very unlikely to be exceeded"). Users selecting this data are able to access the following products from the UI: 1. Map of UK or sub-region 2. CDF plot 3. PDF plot 4. Plume plot 5. Underlying data values Selection of *Full Sampled Data* will display additional selections regarding how you wish to sub-sample the data. The overall data contains 10,000 samples. Users can choose to *Select All* or to sub-sample by one of three methods: 1. **Random**: returns the number of samples the user requests (minimum of 100) 2. **By Id**: returns data for the sample numbers specified by the user 3. **By Variable** at a given percentile for a given Temporal Average: returns a subset of the sampled data based on a certain area of the overall probability space. An example would be sampling by maximum temperature in the summer at the 90th %ile.	Glossary: Sampled Data Guidance: CDF Summary Data

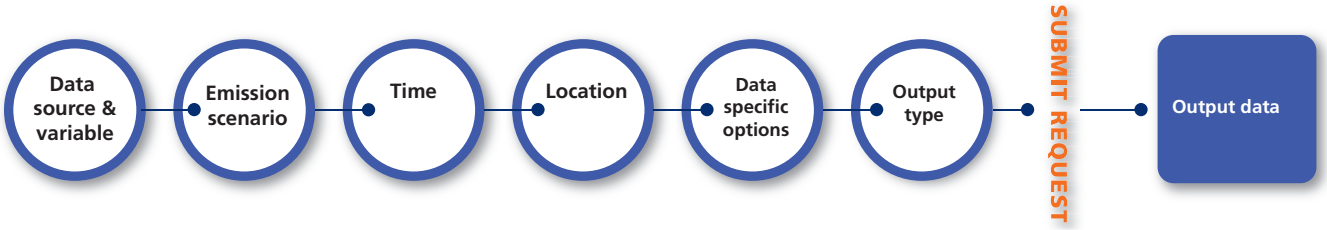
6 Request pathway 1: Probabilistic projections-specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
2	**How does random sampling work?**	If you choose to randomly sample the Sampled Data you can select the number of random samples required. The number of samples must be between 100 and 10,000 inclusive. The minimum of 100 is considered the smallest number of samples allowable to maintain the probabilistic nature of the data. The random selection algorithm considers each selection as an independent event. Because of this you can potentially get multiple samples that are in fact the same in the output data.	
3	**What is sampling by Sample Id?**	Each of the samples in the Sampled Data represents a theoretical variant of the regional climate model. Each model is represented by a unique number (0–9999) and so it is possible to trace particular samples through different usages in UKCP09. Some users may wish to identify certain sample ids as being of particular interest or may wish to use sample ids supplied by another user. Sampling by id allows them to re-use the same samples in different requests. The same ids can also be used when sampling probabilistic projections to perturb the Weather Generator.	
4	**What is sampling by variable at a given percentile and temporal average?**	This method enables the user to sample a particular part of parameter space that might be representative of extremes that they are interested in. The most complex method of sampling the Met Office Hadley Centre probabilistic data is to sample by variable at a percentile for a given season. Users will be allowed to do this so that they can explore a particular part of the parameter space. **Example 1: Good Conditions for Growing Grapes** Wet summer followed by a hot autumn 1. Select 90th %ile of mean precipitation for summer 2. Select 90th %ile of mean temperature for autumn	

6 Request pathway 1: Probabilistic projections-specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4		**Example 2: Good Conditions for Growing Mushrooms** Hot summer followed by a wet autumn: • Select 90th %ile of mean temperature for summer • Select 90th %ile of mean precipitation for autumn The selection process will work as follows: Selecting by 1 variable only: 1. User selects either temperature or precipitation as the input variable (v1). 2. User selects a percentile (p1) at which to sample v1 from a list of 5, 10, …, 90, 95%. 3. User selects a temporal averaging period (tap1) from winter, spring, summer, autumn, annual. 4. System returns 1000 model variants at a 10% range around the chosen percentile. For example selecting 10% would return the range of model variants from 5 – 15%. 5. User can sub-sample between 100 and 1000 times to get chosen sample size (by random sampling). Selecting by 2 variables: 1. User selects either temperature or precipitation as the input variable (v1). 2. User selects a percentile (p1) at which to sample v1 from a list of 5, 10, …, 90, 95%. 3. User selects a temporal averaging period (tap1) from winter, spring, and summer, autumn, annual. 4. System returns 10% of the total number (1000) of model variants at a 10% range around the chosen percentile. For example selecting 10% would return the range of model variants from 5 –15%. 5. User selects to also sub-sample by the second input variable (v2) which can also be either temperature or precipitation. 6. User selects a percentile (p2) at which to sample v2 from a list of 5, 10, …, 90, 95%.	

6 Request pathway 1: Probabilistic projections-specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4		7. User selects a temporal averaging period (tap2) from winter, spring, summer, autumn, annual. Note that the condition (v1, p1, tap1) == (v2, p2, tap2) must not be true. 8. System samples the 1000 model variants selected for (v1, p1, tap1) and returns 10% of the number (100) in that sub-sample a 10% range around the second selections (v2, p2, tap2). The user has now selected only 1% of the original sample size. Note on interpretation of sampling by variable and percentile. Sampling by a primary and secondary variable at set percentiles homes in on a certain area in parameter space. **Once a user has collapsed the uncertainty in this way then it is invalid to make probabilistic statements about the results obtained without also saying that this is only relevant to the 10% (if sampling by 1 variable) or 1% (if sampling by 2 variables) of model variants that have been sub-sampled.** Your selection may be scientifically valid for specific studies, looking at particular conditions, but is no longer a representation of the overall uncertainty. ***Users should note that final sample is NOT the 10% (or 1%) extreme nor is it the 10% (or 1%) return period.***	
5	**How can I sample by variable to get just 100 samples?**	Users wishing to reduce the sub-sample to 100 whilst sampling by only one variable/ percentile/temporal average combination should select sampling by 2 variables but provide the same selections for both variable 1 and variable 2.	
6	**What is the difference between choosing a *Sampling Variable* and a normal *Variable*?**	Sampling Variables are only selected to define a particular sampling method that is used to identify a set of samples. The actual output Variables returned in the output files will be those requested in the Variables selection made earlier.	Glossary: Variable

6 Request pathway 1: Outputs page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why are some of the output types unavailable?**	The availability of Output Types is dependent on the choices made earlier. Following the user guidance icons and links as you build your request will assist in making choices with the Output Type you desire. You can read more about the different Output Types, as well as generating suitable requests, in the main User Guidance products Section.	Glossary: Output Type Glossary: UKCP09 Products
2	**What is the Request Description?**	The Request Description is a word or phrase that you can tag your request with to aid identification later. You will be able to view the request in the Jobs page, the Request Descriptions will be the listed by each job.	
3	**What are the data formats?**	UKCP09 data outputs are available in CF-netCDF and CSV (comma-separated variable) files. CF-netCDF is a binary format whereas CSV is readable in any text editor or spreadsheet package. The formats are explained in detail in the UKCP09 Outputs and Metadata Specification.	UKCP09 Outputs and Metadata Specification
4	**What will happen when I submit my request?**	If you have chosen a raw data output type then you will be forwarded to the Jobs page where you can monitor a job running and download outputs from completed jobs. Note that large jobs will run as offline jobs. Each user can only run one offline job at a time. Note that you can build small requests such as any image requests whilst an offline job is running. If you have chosen an image output type then you will be forwarded to the Graphics page where you can view and refine your plot before downloading it (or the underlying data).	UI Manual: The Jobs page

6 Request pathway 2: Data source – UK probabilistic projections of climate change over marine regions



Choosing Data Source 2 (UK probabilistic projections of climate change over marine regions) provides you with access to the following possible outputs:

- PDF
- CDF
- Plume plot
- Joint Probability Plot
- CDF Data
- Full Data

Note that the only difference from the Data Source 1 outputs is the removal of Map plot from this list. Since there are not many marine regions it was not considered useful to provide a mapped view of the data.

This Section will discuss how various choices will take the user to each of these output types. Figure 5.2 indicates the Request Builder stages involved when selecting Data Source 2. You can click on the links in the left-hand panel to view the details for each of the request builder pages below:

- Data source/variables page guidance
- Emissions scenario page guidance
- Time page guidance
- Location page guidance
- Probabilistic projections specific page guidance
- Output types page guidance

6 Request pathway 2: Data source & variables page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why are less variables defined for marine regions than for land data?**	Most of the UKCIP08 products are focused on land data as this was identified as being most crucial to the user community. At the request of some users additional aggregated areas were added for a subset of core variables.	
2	**What are the consequences of selecting different numbers of variables?**	Users who wish to download Sampled Data are able to select as many variables as allowed. Users wishing to view a Joint-Probability plot must select exactly 2 variables. Users wishing to access any other output type should select only one variable.	Glossary: Output Type

6 Request pathway 2: Emissions scenario page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What output types are available if I select more than one emissions scenario?**	Selecting more than one emissions scenario will limit downstream selections to PDF or CDF plot. All other output types will be unavailable.	Glossary: Emissions scenarios Glossary: PDF plot Glossary: CDF plot
2	**Why can't I select multiple emissions scenarios?**	If you have selected more than one variable then only one emissions scenario can be selected. This is compatible with Sampled Data and in the case where exactly 2 variables have been selected with Joint Probability plots.	Glossary: Sampled Data Guidance: Joint Probability plots

6 Request pathway 2: Time page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What happens if I select all time periods?**	Selection of all time periods is compatible with the Plume Plot output type only.	Glossary: Plume plot Glossary: Time period
2	**Why can I only select a single time period?**	Selection of multiple time periods is only available to Plume Plot outputs. You have selected either multiple variables or multiple emissions scenarios which cannot be rendered as a Plume Plot.	Glossary: Plume plot Glossary: Time period
3	What are the consequences of selecting multiple temporal averages?	Multiple temporal averages can only be selected for users wishing to download Sampled Data. Any plot options must select a single temporal average only.	Glossary: Sampled data Glossary: Temporal average
4	Why can I select only one temporal average?	A previous multiple selection of emissions scenario or time period is not compatible with the previous choices. Download of Sampled Data is the only output type that is compatible with multiple temporal averages.	Glossary: Sampled data Glossary: Temporal average
5	Why can I not select from all temporal averages?	Most of the variables are defined on all months, seasons and annual temporal averages. There are a few exceptions as shown below. The following variables are defined for seasons only: • Temperature of the coolest day • Temperature of the warmest day • Temperature of the coldest night • Temperature of the warmest night • Precipitation on the wettest day	Glossary: Temporal average

6 Request pathway 2: Location page guidance *Please refer to Chapter 7 for details on how to search and select locations on the Location page. This table deals with issues relating to your request and limitations that might apply.*			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can't I select multiple regions?**	Only a single marine region can be selected per request.	Glossary: Marine regions

6 Request pathway 2: Probabilistic projections specific page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What are the consequences of choosing each Probability Data Type?**	Users wishing to get the full Sampled Data output that can be downloaded in data files (in CSV or CF-netCDF format) should select that option. If you wish to access any other data output or a plot select the *CDF Summary Data* option. The *CDF Summary Data* is a series of cumulative distributions, having 107 points, instead of the 10,000 samples in the sampled data. This *Summary Data* is used as the basis for generating a number of UI products. Each of the 107 points represents the probability of a change for a certain variable for a given future scenario based on the temporal and spatial selections made. The most commonly requested probability will be 10% ("very likely to be exceeded"), 50% ("equally likely to be exceeded as not") and 90% ("very unlikely to be exceeded"). Users selecting this data are able to access the following products from the UI: 1. CDF plot 2. PDF plot 3. Plume plot 4. Underlying data values Selection of *Full Sampled Data* will display additional selections regarding how you wish to sub-sample the data. The overall data contains 10,000 samples. Users can choose to *Select All* or to sub-sample by one of three methods: 1. **Random:** returns the number of samples the user requests (minimum of 100) 1. **By Id:** returns data for the sample numbers specified by the user 1. **By Variable** at a given percentile for a given Temporal Average: returns a subset of the sampled data based on a certain area of the overall probability space. An example would be sampling by maximum temperature in the summer at the 90th %ile.	

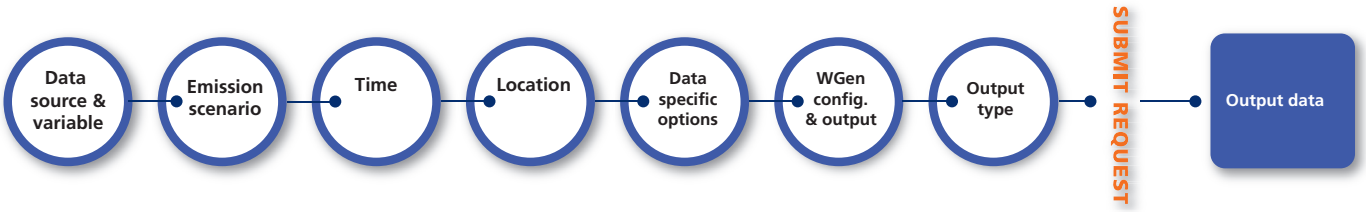
6 Request pathway 2: Probabilistic projections specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
2	**How does random sampling work?**	If you choose to randomly sample the Sampled Data you can select the number of random samples required. The number of samples must be between 100 and 10,000 inclusive. The minimum of 100 is considered the smallest number of samples allowable to maintain the probabilistic nature of the data. The random selection algorithm considers each selection as an independent event. Because of this you can potentially get multiple samples that are in fact the same in the output data.	
3	**What is sampling by Sample Id?**	Each of the samples in the Sampled Data represents a theoretical variant of the regional climate model. Each model is represented by a unique number (0–9999) and so it is possible to trace particular samples through different usages in UKCP09. Some users may wish to identify certain sample ids as being of particular interest or may wish to use sample ids supplied by another user. Sampling by id allows them to re-use the same samples in different requests.	
4	**What is sampling by variable at a given percentile and temporal average?**	This method enables the user to sample a particular part of parameter space that might be representative of extremes that they are interested in. The most complex method of sampling the Met Office Hadley Centre probabilistic data is to sample by variable at a percentile for a given season. Users will be allowed to do this so that they can explore a particular part of the parameter space. **Example 1: Good Conditions for Growing Grapes** Wet summer followed by a hot autumn 1. Select 90th %ile of mean precipitation for summer 2. Select 90th %ile of mean temperature for autumn	

6 Request pathway 2: Probabilistic projections specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4		**Example 2: Good Conditions for Growing Mushrooms** Hot summer followed by a wet autumn: • Select 90th %ile of mean temperature for summer • Select 90th %ile of mean precipitation for autumn The selection process will work as follows: Selecting by 1 variable only: 1. User selects either temperature or precipitation as the input variable (v1). 2. User selects a percentile (p1) at which to sample v1 from a list of 5, 10, …, 90, 95%. 3. User selects a temporal averaging period (tap1) from winter, spring, summer, autumn, annual. 4. System returns 1000 model variants at a 10% range around the chosen percentile. For example selecting 10% would return the range of model variants from 5 – 15%. 5. User can sub-sample between 100 and 1000 times to get chosen sample size (by random sampling). Selecting by 2 variables: 1. User selects either temperature or precipitation as the input variable (v1). 2. User selects a percentile (p1) at which to sample v1 from a list of 5, 10, …, 90, 95%. 3. User selects a temporal averaging period (tap1) from winter, spring, and summer, autumn, annual. 4. System returns 10% of the total number (1000) of model variants at a 10% range around the chosen percentile. For example selecting 10% would return the range of model variants from 5 –15%. 5. User selects to also sub-sample by the second input variable (v2) which can also be either temperature or precipitation. 6. User selects a percentile (p2) at which to sample v2 from a list of 5, 10, …, 90, 95%.	

6 Request pathway 2: Probabilistic projections specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4		7. User selects a temporal averaging period (tap2) from winter, spring, summer, autumn, annual. Note that the condition (v1, p1, tap1) == (v2, p2, tap2) must not be true. 7. System samples the 1000 model variants selected for (v1, p1, tap1) and returns 10% of the number (100) in that sub-sample a 10% range around the second selections (v2, p2, tap2). The user has now selected only 1% of the original sample size. Note on interpretation of sampling by variable and percentile Sampling by a primary and secondary variable at set percentiles homes in on a certain area in parameter space. **Once a user has collapsed the uncertainty in this way then it is invalid to make probabilistic statements about the results obtained without also saying that this is only relevant to the 10% (if sampling by 1 variable) or 1% (if sampling by 2 variables) of model variants that have been sub-sampled.** Your selection may be scientifically valid for specific studies, looking at particular conditions, but is no longer a representation of the overall uncertainty. ***Users should note that final sample is NOT the 10% (or 1%) extreme nor is it the 10% (or 1%) return period.***	
5	**How can I sample by variable to get just 100 samples?**	Users wishing to reduce the sub-sample to 100 whilst sampling by only one variable/ percentile/temporal average combination should select sampling by 2 variables but provide the same selections for both variable 1 and variable 2.	
6	**What is the difference between choosing a *Sampling Variable* and a normal *Variable*?**	Sampling Variables are only selected to define a particular sampling method that is used to identify a set of samples. The actual output Variables returned in the output files will be those requested in the Variables selection made earlier.	Glossary: Variable

6 Request pathway 2: Outputs page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why are some of the output types unavailable?**	The availability of Output Types is dependent on the choices made earlier. Following the user guidance icons and links as you build your request will assist in making choices with the Output Type you desire. You can read more about the different Output Types, as well as generating suitable requests, in the main User Guidance products Section.	Glossary: Output Type Glossary: UKCP09 Products
2	**What is the Request Description?**	The Request Description is a word or phrase that you can tag your request with to aid identification later. You will be able to view the request in the Jobs page, the Request Descriptions will be the listed by each job.	
3	**What are the data formats?**	UKCP09 data outputs are available in CF-netCDF and CSV (comma-separated variable) files. CF-netCDF is a binary format whereas CSV is readable in any text editor or spreadsheet package. The formats are explained in detail in the UKCP09 Outputs and Metadata Specification.	UKCP09 Outputs and Metadata Specification
4	**What will happen when I Submit my request?**	If you have chosen a raw data output type then you will be forwarded to the Jobs page where you can monitor a job running and download outputs from completed jobs. Note that large jobs will run as offline jobs. Each user can only run one offline job at a time. Note that you can build small requests such as any image requests whilst an offline job is running. If you have chosen an image output type then you will be forwarded to the Graphics page where you can view and refine your plot before downloading it (or the underlying data).	UI Manual: The Jobs page

6 Request pathway 3: Data source – Weather Generator simulations

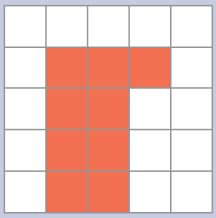


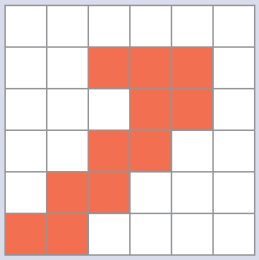
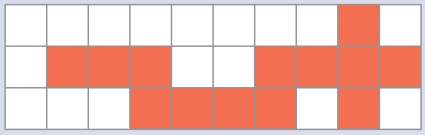
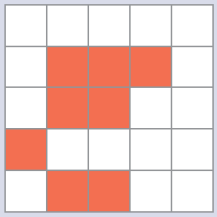
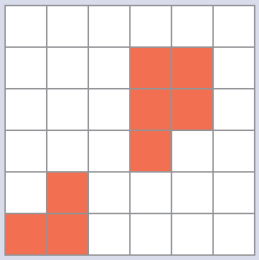
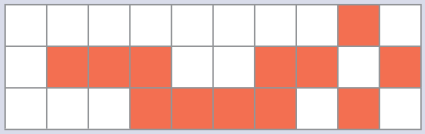
Choosing Data Source 3 (Weather Generator Simulations) allows the user to configure and submit a set of Weather Generator runs. As part of this process the user must select a sample of the UK Probabilistic Projections over Land (Data Source 1) to perturb the climate that the Weather Generator is simulating. As a result, a Weather Generator request consists of the stages shown in Figure 6.3.

6 Request pathway 3: Data source & variables page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can I not select my required variables for a Weather Generator run?**	The Weather Generator produces a standard set of output variables. These are not configurable within the UI. Users wishing to work with specific variables will be able to select those in the output files.	Glossary: Weather Generator Variables

6 Request pathway 3: Emissions scenario page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can't I select multiple Emissions Scenarios?**	Each set of Weather Generator runs can only be perturbed by a single set of probabilistic projections over land. These require choosing: • All Weather Generator output variables • 1 Emissions Scenario only • 1 Time Period only • All Monthly Temporal Averages	

6 Request pathway 3: Time page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can I only select a single Time Period?**	Each set of Weather Generator runs can only be perturbed by a single set of probabilistic projections over land. These require choosing: • All Weather Generator output variables • 1 Emissions Scenario only • 1 Time Period only • All Monthly Temporal Averages	Glossary: Time Period
2	**Why do I have to select all Monthly Temporal Averages?**	Each set of Weather Generator runs can only be perturbed by a single set of probabilistic projections over land. These require choosing: • All Weather Generator output variables • 1 Emissions Scenario only • 1 Time Period only • All Monthly Temporal Averages	Glossary: Temporal Average

6 Request pathway 3: Time page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What grid is used for the Weather Generator Data Source?**	The Weather Generator can be conFigured at a spatial resolution of 5 km. The IDs and centres of each grid box are provided in the UKCP09 5 km grid files.	Description of 5 km grid
2	**Why do I have to select 5 km grid boxes?**	Location selections for the Weather Generator are particular complex. The user may select up to 40 individual 5 km grid boxes (1000 km^2) in all to define a user-defined catchment or region. Grid boxes must all be contiguous (i.e. connected by top, side or bottom to another grid box) as shown in Figure 45b. Invalid selections are shown in Figure 45c.  **Figure 45a: Valid selections**	Glossary: Temporal Average

6 Request pathway 3: Time page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
2		 **Figure 45a: Valid selections**   **Figure 45a: Invalid selections**  	
3	**How do I select multiple grid boxes?**	To select multiple grid boxes just click on the map at a grid box adjacent to (i.e. directly beside, above or below) a grid box you have already selected.	
4	**Can I view the 25 km rotated grid whilst making my selection?**	It is possible to view the 25 km and 5 km grids at the same time. Some users will wish to adjust their selection of 5 km based on the position of the 25 km grid boxes. To do this click the *Show overlay of 25 km grid for reference* check box under the map. Note that this is most useful when you are zoomed in and can clearly see the grid boxes. When the entire UK is visible it is hard to distinguish the grid boxes.	Description of 25 km grid

6 Request pathway 3: Probabilistic projections specific page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**How does random sampling work?**	If you choose to randomly sample the Sampled Data you can select the number of random samples required. The number of samples must be between 100 and 1000 inclusive. The minimum of 100 is considered the smallest number of samples allowable to maintain the probabilistic nature of the data. The maximum number is smaller for Weather Generator runs than when selecting Sampled Data to limit the size of the outputs. Note that users wishing their outputs to be compatible with the Threshold Detector will need to select 100 samples only. The random selection algorithm considers each selection as an independent event. Because of this you can potentially get multiple samples that are in fact the same in the output data.	Glossary: Weather Generator Variables
2	**What is sampling by Sample Id?**	Each of the samples in the Sampled Data represents a theoretical variant of the regional climate model. Each model is represented by a unique number (0–9999) and so it is possible to trace particular samples through different usages in UKCP09. Some users may wish to identify certain sample ids as being of particular interest or may wish to use sample ids supplied by another user. Sampling by id allows them to re-use the same samples in different requests. The same ids can also be used when sampling probabilistic projections to perturb the Weather Generator.	
3	**What is sampling by variable at a given percentile and temporal average?**	This method enables the user to sample a particular part of parameter space that might be representative of extremes that they are interested in. The most complex method of sampling the Met Office Hadley Centre probabilistic data is to sample by variable at a percentile for a given season. Users will be allowed to do this so that they can explore a particular part of the parameter space.	

6 Request pathway 3: Probabilistic projections specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4		**Example 1: Good Conditions for Growing Grapes** Wet summer followed by a hot autumn 1. Select 90th %ile of mean precipitation for summer 2. Select 90th %ile of mean temperature for autumn **Example 2: Good Conditions for Growing Mushrooms** Hot summer followed by a wet autumn: • Select 90th %ile of mean temperature for summer • Select 90th %ile of mean precipitation for autumn The selection process will work as follows: Selecting by 1 variable only: 3. User selects either temperature or precipitation as the input variable (v1). 4. User selects a percentile (p1) at which to sample v1 from a list of 5, 10, …, 90, 95%. 5. User selects a temporal averaging period (tap1) from winter, spring, summer, autumn, annual. 6. System returns 1000 model variants at a 10% range around the chosen percentile. For example selecting 10% would return the range of model variants from 5 – 15%. 7. User can sub-sample between 100 and 1000 times to get chosen sample size (by random sampling). Selecting by 2 variables: 1. User selects either temperature or precipitation as the input variable (v1). 2. User selects a percentile (p1) at which to sample v1 from a list of 5, 10, …, 90, 95%. 3. User selects a temporal averaging period (tap1) from winter, spring, and summer, autumn, annual. 4. System returns 10% of the total number (1000) of model variants at a 10% range around the chosen percentile. For example selecting 10% would return the range of model variants from 5 –15%.	

6 Request pathway 3: Probabilistic projections specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4		5. User selects to also sub-sample by the second input variable (v2) which can also be either temperature or precipitation. 6. User selects a percentile (p2) at which to sample v2 from a list of 5, 10, …, 90, 95%. 7. User selects a temporal averaging period (tap2) from winter, spring, summer, autumn, annual. Note that the condition (v1, p1, tap1) == (v2, p2, tap2) must not be true. 8. System samples the 1000 model variants selected for (v1, p1, tap1) and returns 10% of the number (100) in that sub-sample a 10% range around the second selections (v2, p2, tap2). The user has now selected only 1% of the original sample size. Note on interpretation of sampling by variable and percentile Sampling by a primary and secondary variable at set percentiles homes in on a certain area in parameter space. **Once a user has collapsed the uncertainty in this way then it is invalid to make probabilistic statements about the results obtained without also saying that this is only relevant to the 10% (if sampling by 1 variable) or 1% (if sampling by 2 variables) of model variants that have been sub-sampled.** Your selection may be scientifically valid for specific studies, looking at particular conditions, but is no longer a representation of the overall uncertainty. ***Users should note that final sample is NOT the 10% (or 1%) extreme nor is it the 10% (or 1%) return period.***	
5	**How can I sample by variable to get just 100 samples?**	Users wishing to reduce the sub-sample to 100 whilst sampling by only one variable/ percentile/temporal average combination should select sampling by 2 variables but provide the same selections for both variable 1 and variable 2. This option is useful for those users who want to run the Weather Generator to be compatible with the Threshold Detector.	

6 Request pathway 3: Probabilistic projections specific page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
6	**Which sampling selections will allow me to get hourly data from the Weather Generator?**	If you wish to run the Weather Generator in hourly resolution mode you must ensure that only 100 model variants are sampled. This can by done by: the following methods: • random sampling of exactly 100 model variants • uploading or inputting of exactly 100 model variant IDs • sampling by 2 variables at a given temporal average and percentile	

6 Request pathway 3: Weather Generator configuration page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What does it mean to be compatible with the Threshold Detector?**	If you wish to send your Weather Generator outputs through the Threshold Detector after running them then select the following options: • Duration of runs: 30 years • Frequency: daily • 100 runs of the weather generator	Glossary: Weather Generator Glossary: Threshold Detector
2	**What are the consequences of selecting hourly Weather Generator output?**	If you select *hourly* frequency for the Weather Generator you will be limited to 100 runs and 30 year duration. The reason being that hourly data is 24 times the volume of daily data resulting in much larger files. Note that hourly data is created by a disaggregation of daily data and is still perturbed by the same temporal resolution of future climate change projections as daily data. Also note that you will not be able to analyse hourly data with the threshold detector.	
3	**What run lengths can I choose?**	The Weather Generator run length for daily data must be in the range 30–100 years. For hourly data it must be 30 years.	

6 Request pathway 3: Weather Generator configuration page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4	**What does the Random Seed Generator do?**	The Weather Generator is initiated with a random number generation process. This uses a random number seed in the range 1–29999. The user can choose for the Weather Generator to generate the seed or to set it from the UI. If it is set in the UI then the Weather Generator would be able to reproduce identical output from two runs conFigured using exactly the same parameters. Note that the underlying statistics of two Weather Generator runs using different seeds would be the same but the actual weather generated on any particular day in the sequence would be different.	Glossary: Random seed
5	**What run lengths can I choose?**	The Weather Generator run length for daily data must be in the range 30–100 years. For hourly data it must be 30 years.	
6	**Why can't I select hourly resolution for my Weather Generator runs?**	If you wish to select hourly frequency for the Weather Generator you must have limited the number of model variants sampled to 100 and you must select a duration of 30 years. The reason being that hourly data is 24 times the volume of daily data resulting in much larger files.	

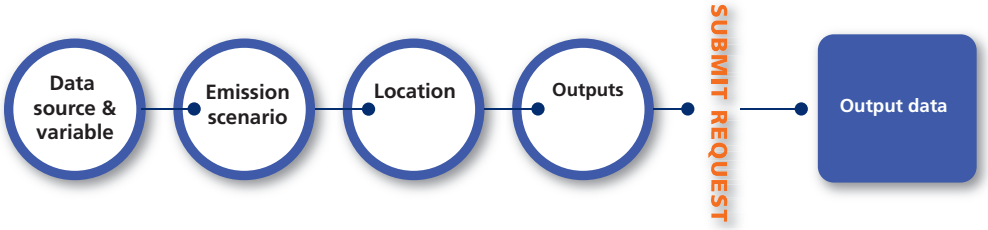
6 Request pathway 3: Weather Generator configuration page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why are some of the output types unavailable?**	When running the Weather Generator the only outputs available are raw data.	Glossary: Output Type Glossary: UKCP09 Products
2	**What is the Request Description?**	The Request Description is a word or phrase that you can tag your request with to aid identification later. You will be able to view the request in the Jobs page, the Request Descriptions will be the listed by each job.	
3	**What are the data formats?**	UKCP09 data outputs are available in CF-netCDF and CSV (comma-separated variable) files. CF-netCDF is a binary format whereas CSV is readable in any text editor or spreadsheet package. The formats are explained in detail in the UKCP09 Outputs and Metadata Specification.	UKCP09 Outputs and Metadata Specification

6 Request pathway 3: Weather Generator configuration page guidance *continued*			
Item	**Issue/Description**	**Guidance**	**Further information**
4	**What will happen when I Submit my Weather Generator request?**	Weather Generator jobs are considered as Offline jobs in UKCIP08. When you submit the job you will be forwarded to the Jobs page where you can monitor the progress of the job. When the job has completed you will be able to download the outputs or, where compatible, send them to the Threshold Detector. Note that you can build small requests such as any image requests whilst an offline job is running.	
5	**What is defined as an offline process?**	Many UI requests are very small and can therefore be serviced and returned to the user within seconds. These are considered as immediate jobs and are processed by the main UI Processing servers. However, certain requests, for large volumes of data, Weather Generator and Threshold Detector outputs are likely to run for a duration of minutes to hours. These jobs are known within the system as offline jobs. They are controlled by the UI Scheduler which determines: 1. The potential size and run-duration of the job 2. Which resources are free to process the job 3. Whether the job must be queued for a period because many jobs are currently processing.	

6 Request pathway 4: Multi-level ocean projections

This data is not yet available under the UI.

6 Request pathway 5: Data source – Storm surge height projections for UK waters



Choosing Data Source 5 (Storm Surge Height Projections) provides the user with access to either of the following outputs:

- Return periods plot
- Raw data

Figure 6.5 (above) indicates the Request Builder stages involved when selecting Data Source 5. Since Data Source 5 requests receive all time steps the Time page is not included in this pathway. The Data Source-specific page is also omitted as no additional selections are required for Storm surge height projections.

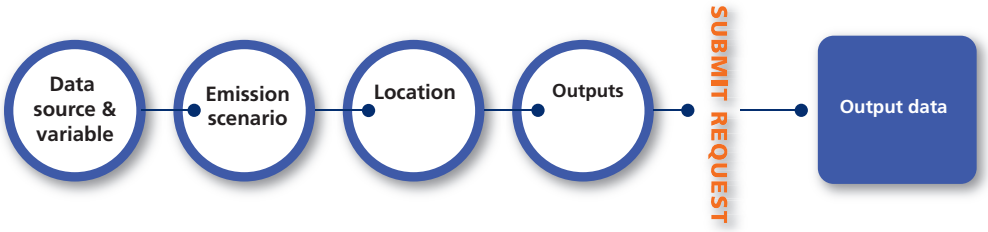
6 Request pathway 5: Data source & variables page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What variables are available for storm surge trend projections?**	There is one variable available for the storm surge projections: Long-term trend in Skew Surge (1951–2099).	Glossary: Skew storm surge

6 Request pathway 5: Emissions scenario page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can't I select multiple Emissions Scenarios?**	Only one emissions scenario has been modelled for this dataset (Medium). The page is displayed because it is considered useful in all cases for the user to know which emissions scenario is being used.	Glossary: Emissions Scenarios

6 Request pathway 5: Location page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can't I select multiple grid boxes?**	Trend in skew surge can only be selected for a single location. Users can then select a Return Periods Plot or Raw Data for the coastal location of interest.	
2	**How is the relative storm surge grid defined?**	The grid that the storm surge data is defined on is detailed in the UKCP09 grids definitions.	Description of storm surge grid

6 Request pathway 5: Location page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What output types are available for storm surge data?**	Either a Return Periods Plot its underlying data is available for storm surge data.	Glossary: Return Period Glossary: Return Periods plot
2	**What is the Request Description?**	The Request Description is a word or phrase that you can tag your request with to aid identification later. You will be able to view the request in the Jobs page, the Request Descriptions will be the listed by each job.	
3	**What are the data formats?**	UKCP09 data outputs are available in CF-netCDF and CSV (comma-separated variable) files. CF-netCDF is a binary format whereas CSV is readable in any text editor or spreadsheet package. The formats are explained in detail in the UKCP09 Outputs and Metadata Specification.	UKCP09 Outputs and Metadata Specification
4	**What will happen when I Submit my request?**	If you have chosen a raw data output type then you will be forwarded to the Jobs page where you can monitor a job running and download outputs from completed jobs. Note that large jobs will run as offline jobs. Each user can only run one offline job at a time. Note that you can build small requests such as any image requests whilst an offline job is running. If you have chosen an image output type then you will be forwarded to the Graphics page where you can view and refine your plot before downloading it (or the underlying data).	UI Manual: The Jobs page

6 Request pathway 6: Data source – Projections of sea level rise for UK waters



Choosing Data Source 6 (Projections of Sea Level Rise for UK Waters) provides the user with access to either of the following outputs:

- Plume plot
- Raw data

Figure 6.4 indicates the Request Builder stages involved when selecting Data Source 6. Since Data Source 6 requests receive all time steps the Time page is not included in this pathway. The Data Source-specific page is also omitted as no additional selections are required for this Sea Level Rise.

6 Request pathway 6: Data source & variables page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What is the difference between relative and absolute sea level rise?**	Sea Level Rise is provided in two forms: • Absolute Sea Level Rise • Relative Sea Level Rise Absolute Sea Level Rise is generated from a collection of multiple Global Climate Model (GCM) runs from modelling centres around the world. The coarse resolution of the models leads to one grid box representing the UK. Absolute Sea Level Rise does therefore not include a Location selection page as all data is for the entire UK region. Relative Sea Level Rise is generated by combining the Absolute Sea Level Rise data with a Land Movement dataset at a resolution of approximately 0.9°. Land movement accounts for the vertical movement of different parts of the UK landmass. Relative Sea Level Rise can be selected at ay single grid point that overlaps with the UK coastline. Output types available for Absolute and Relative Sea Level Rise are Plume Plot and Raw Data.	Glossary: Absolute Sea Level Glossary: Relative Sea Level

6 Request pathway 6: Emissions scenario page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can't I select multiple Emissions Scenarios?**	For Sea Level Rise only one Emissions Scenario can be selected per request. You will be able to select a plume plot or underlying data when you have completed your request.	

6 Request pathway 6: Location page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**Why can't I select multiple grid boxes?**	Relative Sea Level Rise can only be selected for a single location. Users can then select a Plume Plot or Raw Data for the coastal location of interest. Absolute Sea Level Rise is only available for the entire UK and so the location page does not appear when you have selected that variable.	Glossary: Relative sea level
2	**How is the relative sea level grid defined?**	The grid that the relative sea level is defined on is detailed in the UKCP09 grids definitions.	Description of sea level rise grid

6 Request pathway 6: Output types page guidance			
Item	**Issue/Description**	**Guidance**	**Further information**
1	**What output types are available for Sea Level Rise data?**	Either a Plume Plot its underlying data is available for sea level rise variables.	Glossary: Absolute Sea Level Glossary: Relative Sea Level Glossary: Plume Plot
2	**What is the Request Description?**	The Request Description is a word or phrase that you can tag your request with to aid identification later. You will be able to view the request in the Jobs page, the Request Descriptions will be the listed by each job.	
3	**What are the data formats?**	UKCP09 data outputs are available in CF-netCDF and CSV (comma-separated variable) files. CF-netCDF is a binary format whereas CSV is readable in any text editor or spreadsheet package. The formats are explained in detail in the UKCP09 Outputs and Metadata Specification.	UKCP09 Outputs and Metadata Specification
4	What will happen when I submit my request?	If you have chosen a raw data output type then you will be forwarded to the Jobs page where you can monitor a job running and download outputs from completed jobs. Note that large jobs will run as offline jobs. Each user can only run one offline job at a time. Note that you can build small requests such as any image requests whilst an offline job is running. If you have chosen an image output type then you will be forwarded to the Graphics page where you can view and refine your plot before downloading it (or the underlying data).	UI Manual: The Jobs page

7 Spatial selections

The Location, Location Start and Graphics pages all contain elements of spatial selection. This chapter describes how to use the various spatial controls in order to select the location(s) you require. Note that in most cases the UI limits the spatial selection to just one location, be it a grid box or an aggregated area (such as a river basin). A number of the features described below are therefore not available in all pathways through the UI.

7.1 Controlling the interactive map

Figure 7.1 shows an example of the interactive map that can be used to select your location.

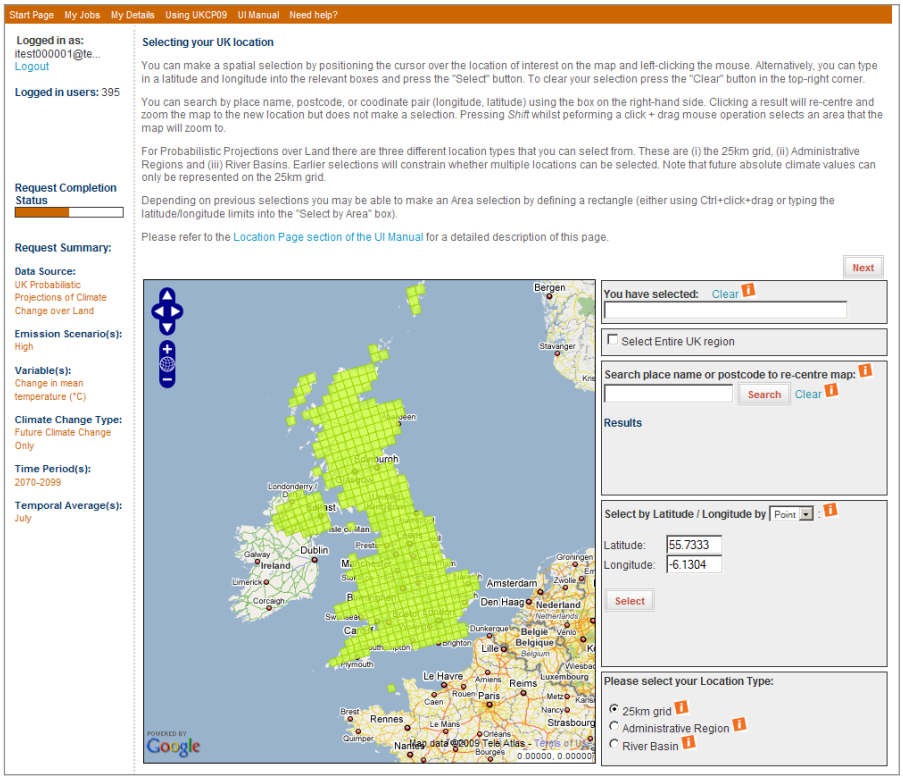


Figure 7.1: The interactive map

Zooming in and out

To zoom the map you can use any of the following methods:

- Double-click the mouse button when over the map to zoom in.
- When the mouse cursor is on the map you can spin the mouse wheel (if you have one) to zoom in or out.
- Use the  buttons to zoom in or out.

Note that only a fixed number of zoom levels are enabled.

7.1.1 Panning around

To pan the map up/down/left/right you can use any of the following methods:

- Single-click the mouse button when over the map and drag the map in the direction you wish to "pull" it.
- Use the  buttons to pan in the direction you require.

Note that you cannot pan the map outside of the UK region.

7.1.2 Selecting a single location

To select a single location hold the mouse still and click on the location you wish to select. If the location is invalid the UI will either indicate this with a warning message or, in the case of some data sources, just ignore the click.

7.1.3 Selecting an area via a bounding box

To make a rectangular area selection hold down the Shift key and then click and drag a rectangular selection on the map. Figures 7.2 shows an example of this.

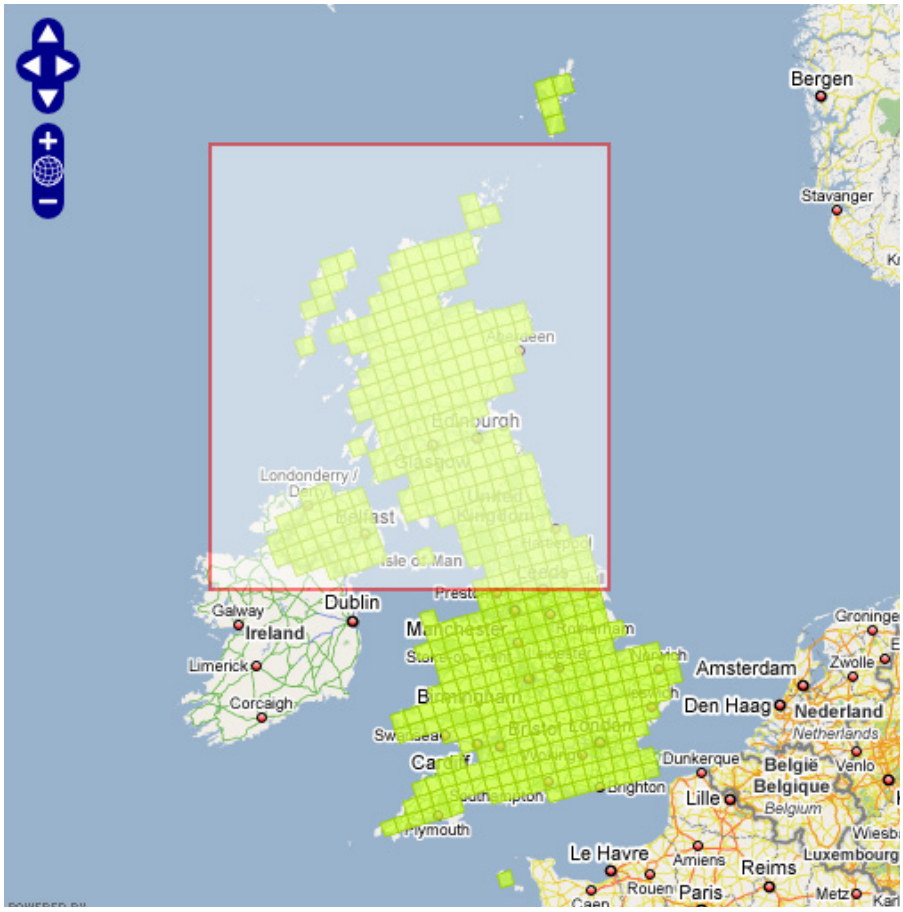


Figure 7.2: Using the Shift, click and drag method to select a spatial area.

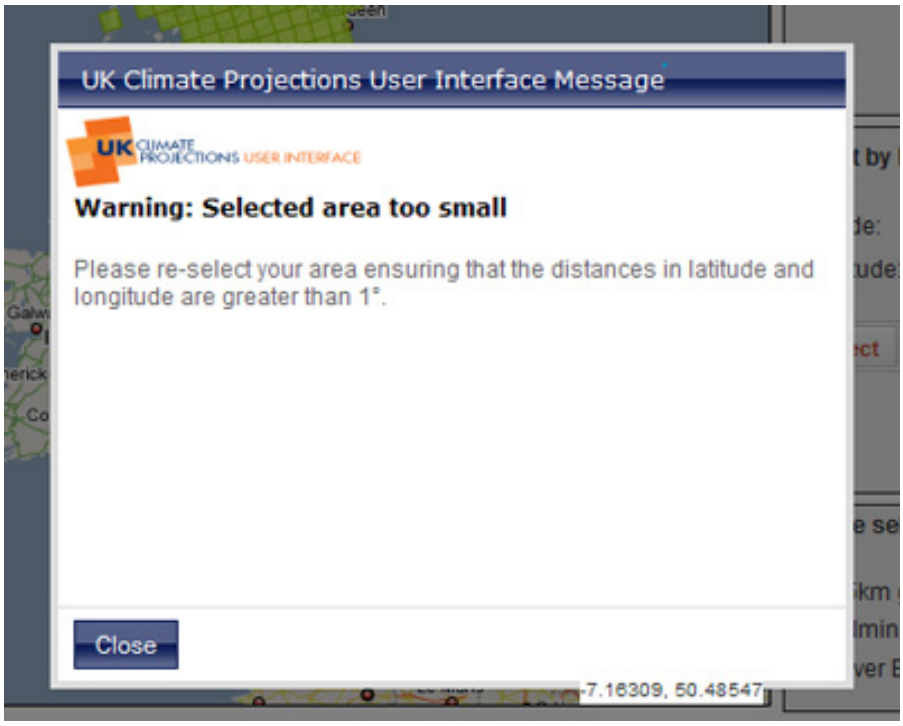


Figure 7.3 An example warning for an invalid selection

7.1.4 Selecting multiple adjacent grid boxes (Weather Generator only)

When making a spatial selection for the Weather Generator you can select up to 40 adjacent grid boxes. To select each grid box just point the cursor at it and click once. If your click does not register please check that the grid box is (a) adjacent to another grid box already selected and (b) you have not already selected 40 grid boxes. Figures 7.4 shows an example of the multiple grid box selection.

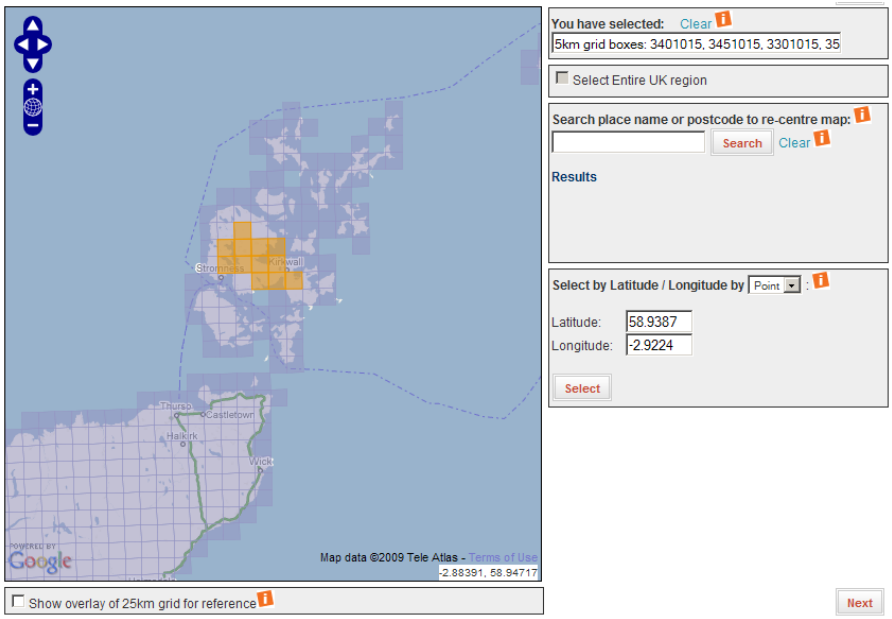


Figure 7.4: Selecting multiple adjacent grid boxes in the Weather Generator

Note that you can also view the 25 km grid as an overlay on top of the 5 km Weather Generator grid by clicking the check box labelled *Show overlay* of 25 km grid for reference.

7.1.5 Viewing your current selection

On the Location page you can view your current selection on the map as it is displayed as an overlay. You can also see it displayed in the top-right corner in the *You have selected box*. Figure 7.5 shows that if you hover over this box the full text will be displayed.

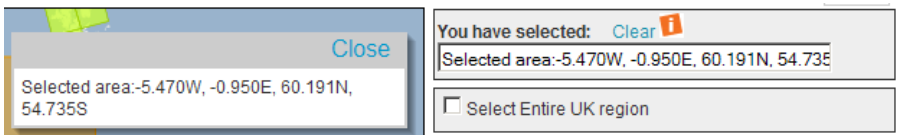


Figure 7.5: Hover over feature of current selection box

On the Location Start page your current selection is not displayed on the map. This is because you have a list of possible locations to choose from on the Data source list that appears in the Step 2 box. The listed data sources include a description of the available spatial average and the location name or id.

On the Graphics page there are two possibilities:

- For map outputs: your location is indicated with a red rectangular outline over the interactive map.
- For non-map outputs: your selected location is indicated in the Location box to the right of the plot. Clicking *Change* will allow you to click the map to modify this selection.

7.1.6 Clearing your current selection

To clear your current selection click the *Clear* button in the *You have selected* box to the right of the map as shown in Figure 7.5.

7.2 Selecting by a latitude/longitude point

The Location and Location Start pages allow you to select your location by typing in a latitude and longitude into the input boxes as an alternative to clicking on the map. This might be useful when you know the coordinates of the location of interest exactly but you are not sure how to locate it visually.

Figure 7.6 shows the selection by point action. First type in the latitude and longitude desired and then click the *Select* button beneath them. Note that sometimes you may see inputs for North, South, East and West. You can revert to latitude and longitude inputs by changing the drop-down menu above them from Area to Point.

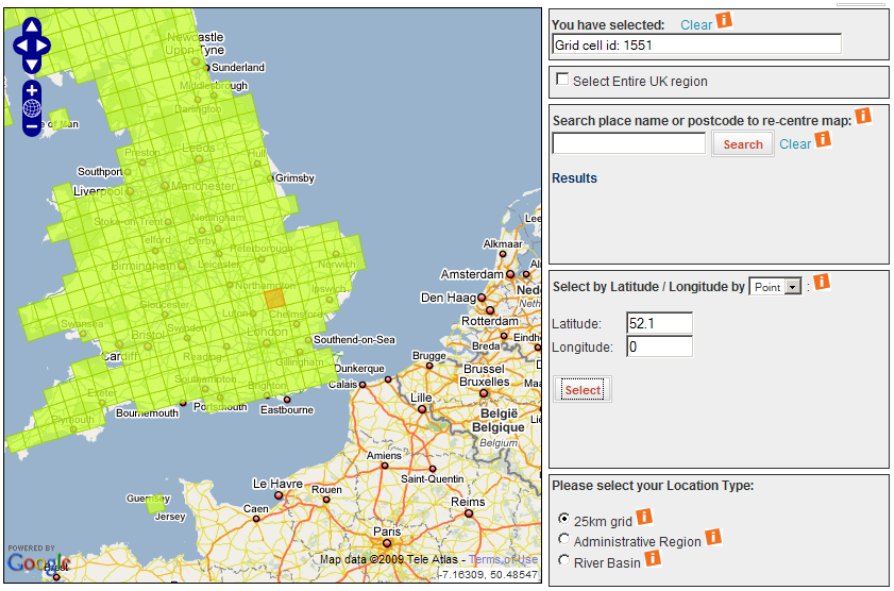


Figure 7.6: Selection by latitude/longitude point

7.3 Selecting by a latitude/longitude area

The Location page allow you to select your location by typing in values for the North, South, East and West extremes of your required area into the input boxes as an alternative to selecting an area on the map. This can be useful when you want to select an area exactly.

Figure 7.7 shows the selection by area action. First type in the desired values for North, South, East and West and then click the *Select* button beneath them. Note that sometimes you may see inputs for latitude and longitude instead. You can revert to latitude and longitude inputs by changing the drop-down menu above them from Point to Area.

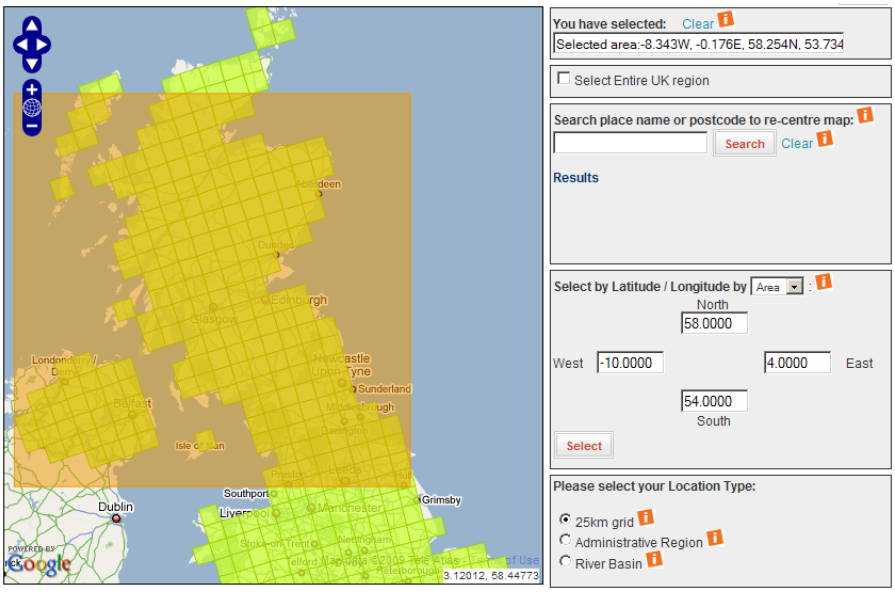


Figure 7.7: Selection by latitude/longitude area

7.4 Selecting the entire UK

For a limited number of routes through the system you will be able to select the entire UK. You can do this by clicking the checkbox labelled *Select Entire UK* region to the right of the map. This is shown in Figure 7.8.

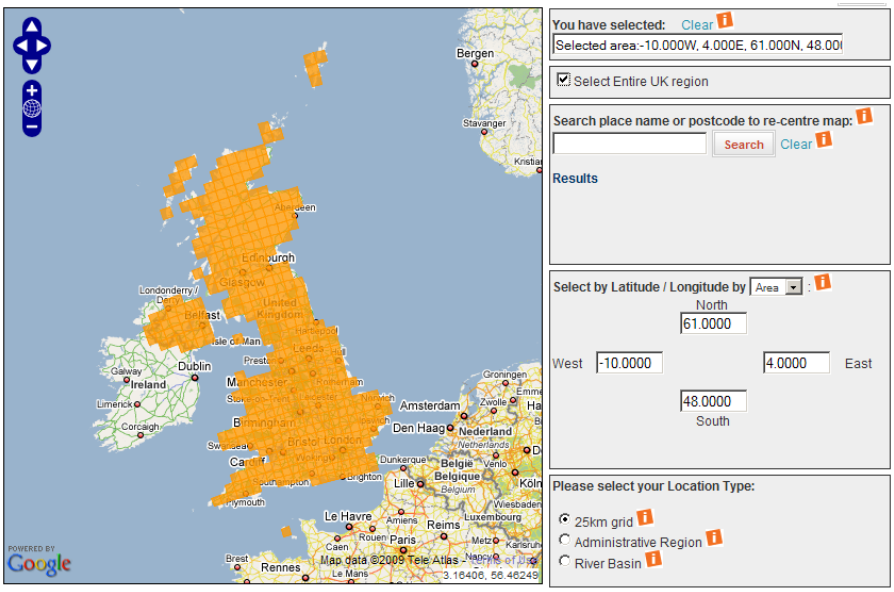


Figure 7.8: Selecting the entire UK

7.5 Searching by place name or postcode

On the Location and Location Start pages you can also find your location of interest by doing a search by place name or postcode. Simply type the search term into the box labelled *Search place name or postcode to re-centre map* and click the *Search* button next to it. As shown in Figure 7.9, the results of your search appear directly underneath the search box. When you click on one of these results the map will re-centre and zoom to the location selected.

Please note that this facility is only designed to help you find a location. It does not actually make a selection.

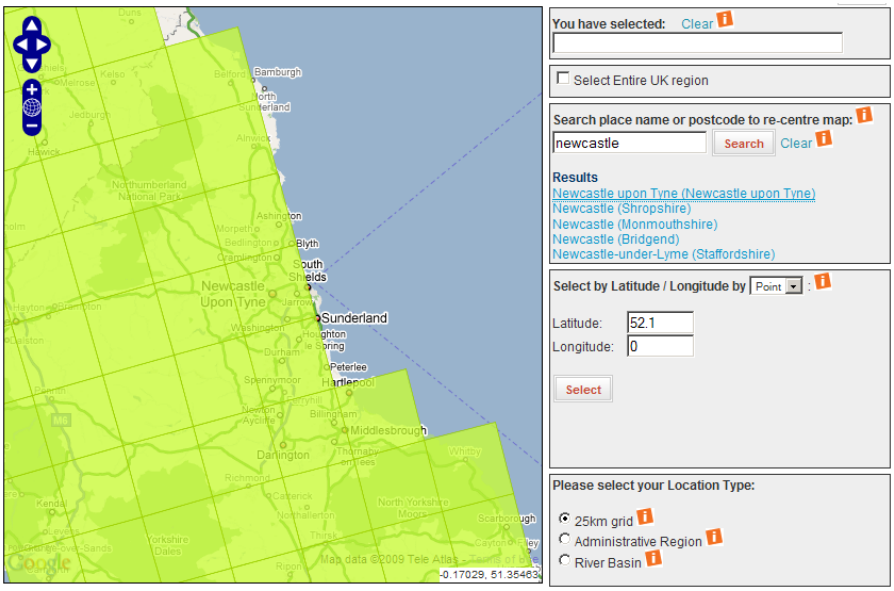


Figure 7.9: Searching by placename to re-centre the map on a location

7.6 Changing the Spatial Average displayed

The spatial average is the type of grid, or aggregated area, that is displayed on the map. In some pathways through the UI you will have a choice of spatial average. To change the spatial average that you wish to select from click one of the options available in the Spatial Average selection box to the bottom-right of the map. This is shown in Figure 7.10 with the River Basins spatial average selected.

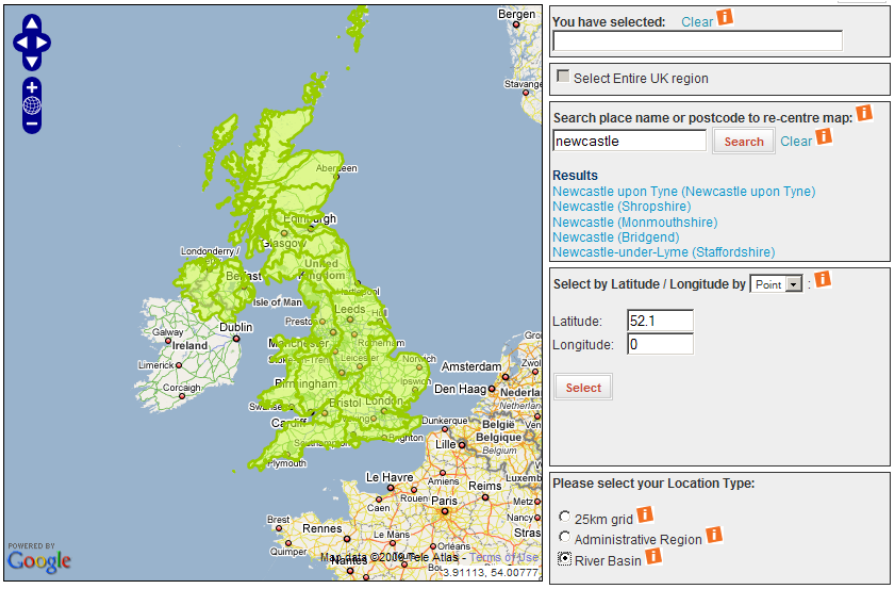


Figure 7.10: Selecting your Spatial Average

Appendix

Appendix A: Ancillary files available from UKCP09

There are a number of additional files available that relate to the spatial descriptions of the UKCP09 products. Please see the main grids page in the UI documents for more information.

Appendix B: Browser compatibility

What is browser compatibility?

Most users of the Internet are familiar with web browsers. Typically Microsoft Internet Explorer, Mozilla Firefox and Apple Safari will be recognisable.

There are many standards used in Internet computing to try and ensure that different systems are compatible. However, each browser tends to implement a slightly different interpretation of the standards. As a result, web developers have to spend a significant amount of time writing and testing code for each specific browser.

If a web-site runs properly on a browser then we say the site is compatible with that browser.

What browsers can I use the UI with?

There are numerous browsers available and it would not be possible to support them all. The UKCP09 project asked its Users' Panel what the most important browsers were for us to support. The following were identified in the requirements for the project:

- Microsoft Internet Explorer 6
- Microsoft Internet Explorer 7
- Mozilla Firefox 2
- Mozilla Firefox 3
- Apple Safari

The system has been extensively tested on these browsers. We have had promising results when experimenting on the Opera browser as well but we do not officially support it.

Internet Explorer 8

The UI has not been tested in Internet Explorer 8 (IE8) and we do not officially support the browser. However, some users have reported that they can use the UI under IE8 if they apply the configuration change described here.

Limitations of Internet Explorer 6

Whilst the UI has been developed to run on Internet Explorer 6 it is worth noting that some features of the Graphics page are not available on this particular browser. Internet Explorer 6 users should also expect the UI to run slower than when using one of the more recent browsers. For more information on known issues with IE6, please see below.

Assistance on running the UI in Internet Explorer 6

The UI does run in Internet Explorer 6, however there are a few known issues which can be fixed as follows:

Problem: Graphics page causes browser to seize up in IE6

Solution 1: Enabling pop-ups

- Start IE6.
- Click on the Tools menu.
- Select Internet Options.
- A dialogue window should appear with various tabs, click the Privacy tab.
- At the bottom of the dialogue window is a Pop-up Blocker Section.
- Untick the Block pop-ups tick box.
- Click OK.

Solution 2: Allow all cookies

- Start IE6.
- Click on the Tools menu.
- Select Internet Options.
- A dialogue window should appear with various tabs, click the Privacy tab.
- Drag the slider to Accept all cookies.

Assistance on running the UI in Internet Explorer 8

The UI has not been tested in Internet Explorer 8 (IE8) and we do not officially support the browser. However, some users have reported that they can use the UI under IE8 if they apply the configuration change described below. The particular configuration option is the Compatibility View Settings.

Figure B.1 shows how the location page can get stuck when trying to load a map on IE8.

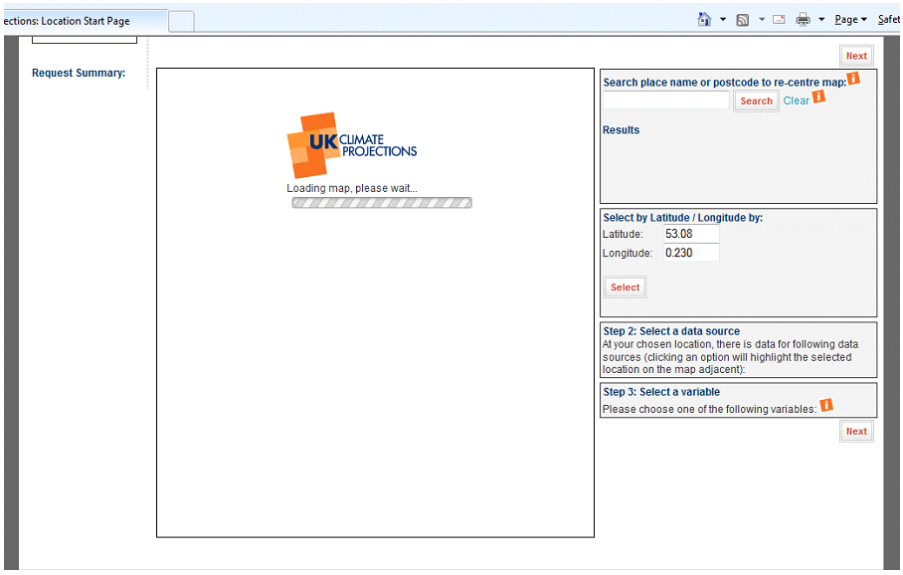


Figure B.1: Location page not loading fully on IE8

Figure B.2 shows the type of error message that is usually displayed at this point.

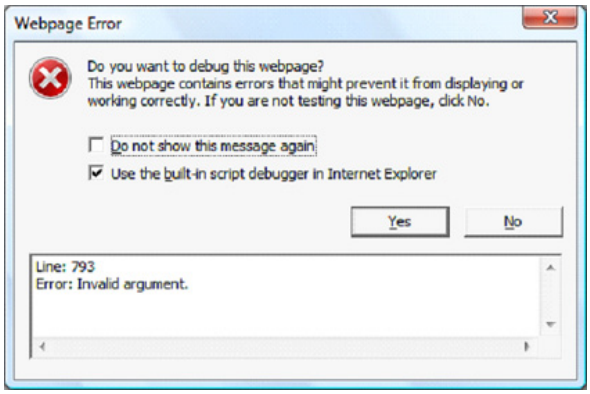


Figure B.2: IE8 error message

To fix this problem click on the Tools menu in the top-right corner of the browser. Select Compatibility View Settings from the drop-down list (as shown in Figure

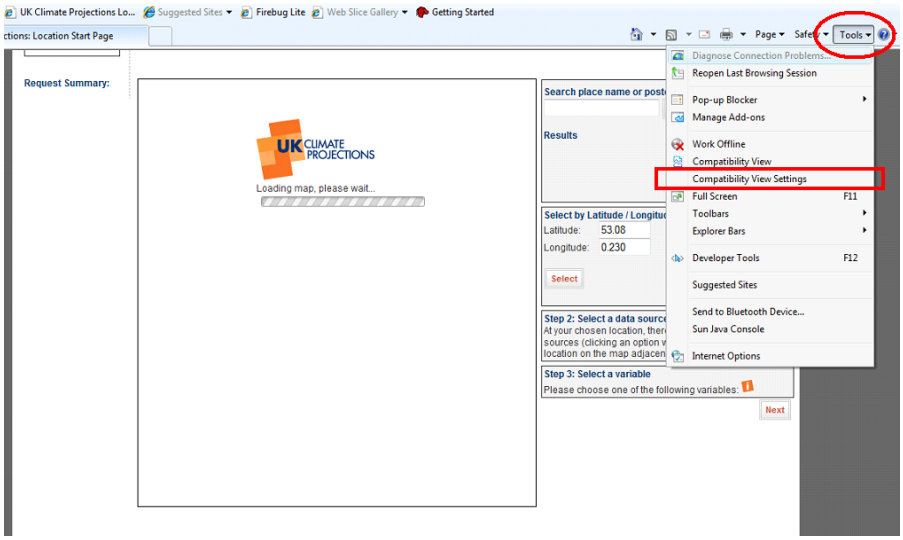


Figure B.3: Selecting the Compatibility View Settings

A dialogue window will appear. Please add “defra.gov.uk” to the list as shown in Figure B.4 and then click Close.

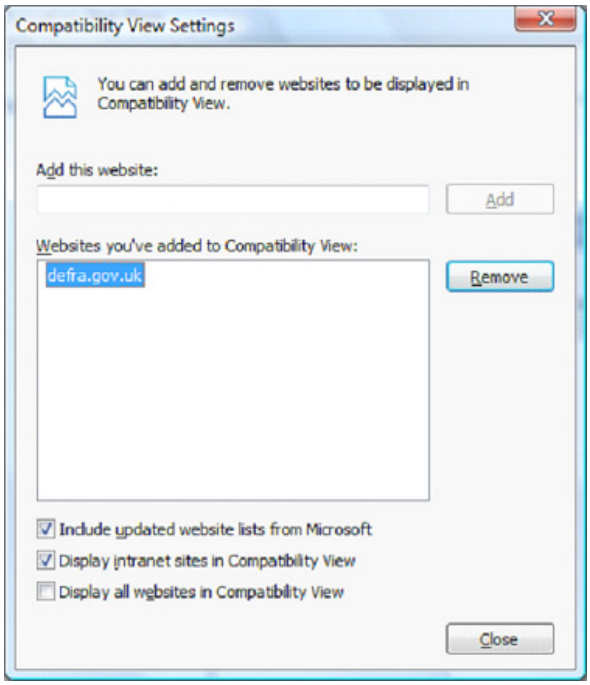


Figure B.4: Compatibility View Settings dialogue window

When you reload the page it should load the map properly as shown in Figure B.5.

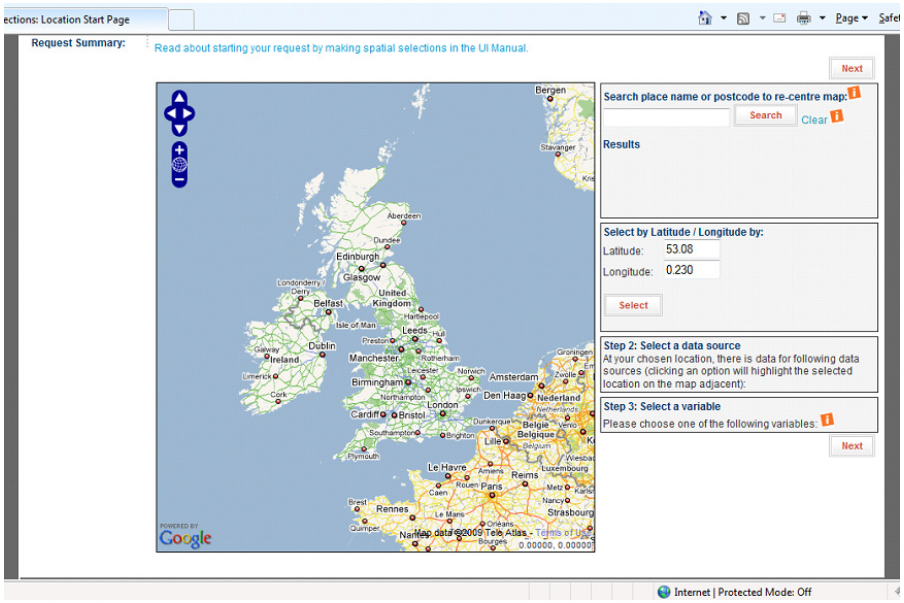


Figure B.5: Map correctly rendered in IE8

Appendix C: Managing user jobs

The UI provides the front-end to a number of servers used to process requests made by UKCP09 users. This appendix provides a brief technical description of how the system is structured at the back-end.

Offline processes

Many UI requests are very small and can therefore be serviced and returned to the user within seconds. These are considered as immediate jobs and are processed by the main UI Processing servers.

However, certain requests, for large volumes of data, Weather Generator and Threshold Detector outputs are likely to run for a duration of minutes to hours. These jobs are known within the system as offline jobs. They are controlled by the UI Scheduler which determines:

- The potential size and run-duration of the job
- Which resources are free to process the job
- Whether the job must be queued for a period because many jobs are currently processing.

Limitations on running multiple offline jobs

The UI only allows each user to submit one offline job at a time. This is considered a consistent rule to avoid any one user overloading, or having an unfairly large access to, the system.

Note on caching and reproducibility of outputs

The UI Processing servers operate a temporary store, or cache, of previously requested job outputs. The purpose of this is:

- To speed up response times
- To avoid duplication in processing and storage

If User A makes the same request that User B made yesterday, it is highly probably that User B can be pointed directly at the outputs generated for User A.

Users are asked to consider that there are limitations on the cache so the following cases may occur:

- User B makes a large request that happens to be cached from a job yesterday by User A. User B thinks the system is incredibly quick and tells all her friends. When User B tries a similar request it takes 4 hours to complete. User B thinks the system is very slow now. The reason is that User A's job had taken 4 hours as well but the UI had cached his outputs.
- If some aspect of the request is non-deterministic (i.e. cannot be determined exactly from the user selections made) then the outputs can never be cached and re-used for another job. Typical examples are jobs that include a random selection process, this must always be carried out randomly and must therefore be done differently for each request.

Appendix D: Referencing UKCP09 products in your research

The UI allows you to generate millions of different output files. Since you may choose to use this data in research and publications there is a requirement to provide a mechanism for referencing your outputs.

Most outputs produced by the system are exactly reproducable by submitting an identical request. They can therefore be given a unique ID which can be referenced directly. To get the reference for a given output you can either:

- visit the Jobs page, hover over the Share link and copy the re-usable URL
- in your downloaded outputs open the metadata.xml file and copy the re-usable URL from the "ReUseURL" Section.

Note that some requests involve a random element and cannot therefore be guaranteed to reproduce exactly the same results when repeated. As a result the UI does not provide re-usable URLs for these requests. When referencing these requests you should describe the selections made when building the request. Note that the *metadata.xml* file in your outputs should list the parameters that you chose.